LETTING DATE 06/15/10

DYNAMIC MESSAGE SIGNS

ITS-035-5(100)111--25-85

STORY COUNTY

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Iowa Department of Transportation

Highway Division

PLANS OF PROPOSED IMPROVEMENTS ON THE

INTERSTATE ROAD SYSTEM

STORY COUNTY

DYNAMIC MESSAGE SIGNS

Just N. of US 30

SCALES: As Noted

The Iowa Department of Transportation Standard Specifications for Highway and Bridge Construction, Series 2009, plus applicable General Supplemental Specifications, Developmental Specifications, Supplemental Specifications and Special Provisions, shall apply to construction work on this project.

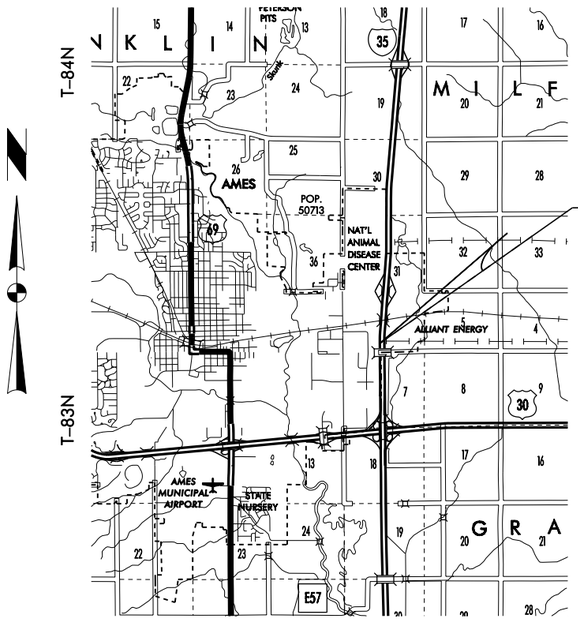
Value Engineering Saves. Refer to Article 1105.15 of the Specifications.

NO MILEAGE SUMMARY

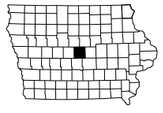
TOTAL
23
PROJECT IDENTIFICATION NUMBER
10-85-035-010
PROJECT NUMBER
ITS-035-5(100)111--25-85

INDEX OF SHEETS

No.	Description
A.01	TITLE SHEET
B.01-B.02	TYPICAL DETAILS
C.01-C.05	QUANTITIES, ESTIMATE REFERENCE NOTES, TABS
N.01-N.03	DETAILS OF SITE #33 AND SIGN DETAILS
V.1-V.10	STRUCTURAL DETAILS
X.01-X.02	SITE CROSS SECTIONS



DMS #33
I-35 SOUTHBOUND
STA. 629+55
M.P. 112.83



LOCATION MAP SCALE
0 0.5 1 1.5
Miles

INDEX OF SEALS

SHEET NO.	NAME	TYPE
A.01	John M. Narigon	Primary Signature Block
V.1	James R. Hauber	Structural Details

LICENSED PROFESSIONAL ENGINEER John M. Narigon 11842 IOWA

I hereby certify that this plan was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature 04/01/2010 Date

John M. Narigon
Printed or Typed Name

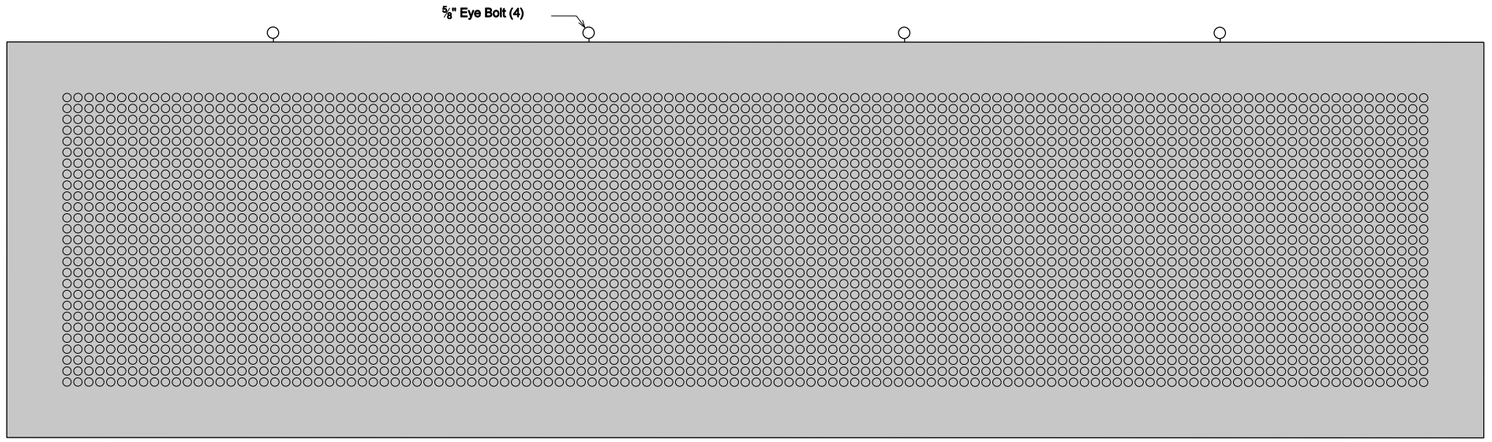
My license renewal date is December 31, 2011

Pages or sheets covered by this seal:
A.01, B.01-B.02, C.01-C.05, N.01-N.03, X.01-X.02

DIMENSIONAL INFORMATION

Type: Full Matrix
Pixels: 125 x 27 (width x height)

Max. Height: 8'0"
Max. Width: 30' 0"
Max. Depth: 4'0"
Max. Weight: 4000 lbs



STORAGE LOCATION

Iowa Department of Transportation
Ames Maintenance Facility
57073 E. US 30
Ames, IA 50010

Phone: (515) 232-8226

TRANSPORTATION REQUIREMENTS

All material and equipment necessary to transport the sign to or from the storage site shall be furnished by the Contractor.

The sign shall be transported in the upright posititon. At no point in time shall the sign be laid on its side, front, or back.

To avoid damage to the sign during tranport, consult the sign manufacturer to determine the correct method to secure the sign to the trailer. Any damage incurred duing transportation shall be the responsibility of the Contractor.

STORAGE REQUIREMENTS

All material and equipment necessary to store the sign at the designated site shall be furnished by the Contractor.

The sign shall be stored upright and level. At no point in time shall the sign be laid on its side, front, or back.

The sign must be blocked up at least three inches from the ground. When the sign is not stored on concrete, extra blocking should be used to provide for settlement.

To avoid damaging the bottom skin of the housing, blocking shall be placed directly beneath the sign's internal structural supports.

Remove all blocking from the DMS after installation on the sign truss.

During transportation and storage, the DMS shall be secured at all times to prevent tipping. The DMS shall be secured with dead man anchors or other suitable methods. Ensure that the DMS is not marred by the selected method. Tipping may be caused by any number of reasons, but high winds and other weather related events are the primary concern while the DMS is on the ground.

Any damage resulting from the failure to properly secure the DMS shall be the responsibility of the Contractor.

ATTACHMENT HARDWARE

All materials necessary to attach the DMS to the support structure will be furnished with the DMS.

Dry fit the DMS to the sign truss to determine the actual attachment bracket locations. Adjust the brackets to avoid conflicts between the U Bolts and the internal members of the sign truss. Drill the bolt holes in the Z bracket on the back of the DMS after conflicts are resolved.

After installation of the DMS onto the truss, ensure that all unused hardware (bolts, nuts, washers, etc), construction materials, tools and such are removed from the structure. The Contractor is liable for any damages that result from materials falling into traffic.

LIFTING REQUIREMENTS

The following procedures should be followed when lifting the sign for either removal or installation. This includes lifting the sign from the storage site to the trailer or the reverse, and from the trailer to the support structure or the reverse.

The Contractor shall provide all equipment necessary to lift the DMS.

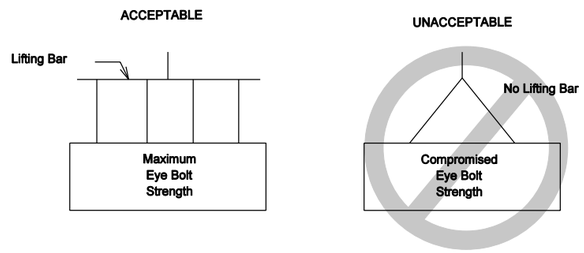
The crane and lifting bar shall be rated to lift the weight of the sign.

Any damage incurred during lifting shall be the responsibility of the Contractor.

Consult the manufaturer for complete lifting requirements.

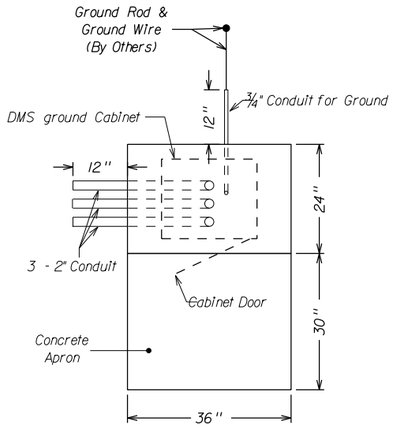
The eyebolts used to lift the sign shall be furnished by the Contractor.
The rated load of the eyebolts shall not be exceeded.
Consult manufacturer for specific information about the eyebolts.

The figures illustrate the correct (left example) and the incorrect (right example) method of lifting a sign. Lift the sign with the lifting bar as shown on the left. Use every lifting point (eyebolt) provided. Not doing so may cause the eyebolts to fail.

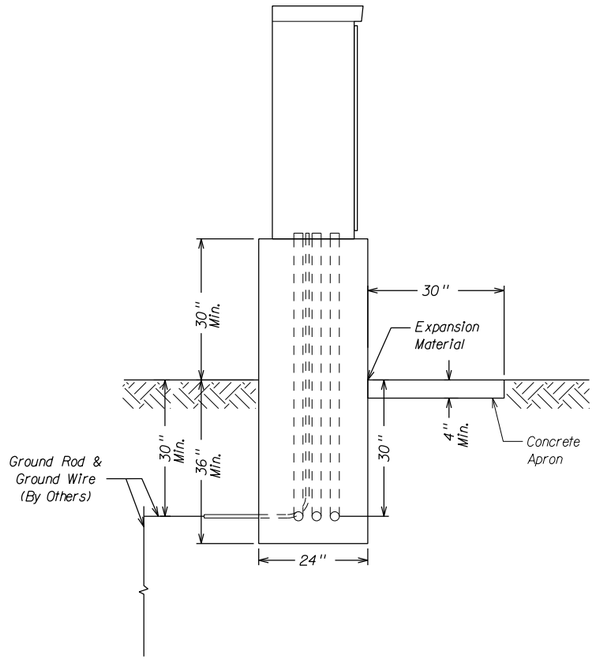


After installation, plug and seal the eyebolt openings as per the manufacturer's requirements. Any damage incurred by improperly sealed openings shall be the responsibilty of the Contractor.

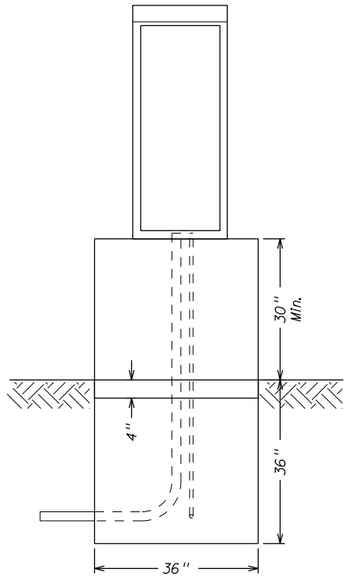
LARGE DYNAMIC MESSAGE SIGN TYPICAL DIMENSIONS AND CARE AND HANDLING REQUIREMENTS



Top View



Side View



Front View

Center DMS Cabinet on footing and attach with pull out anchors. Refer to IM 453.09 for approved anchors.

Center conduits in the footing. Prior to pouring the footing, confirm that no conflicts exist between the conduit placement and the ground cabinet. Maintain at least 2" of clearance to the edge of the ground cabinet.

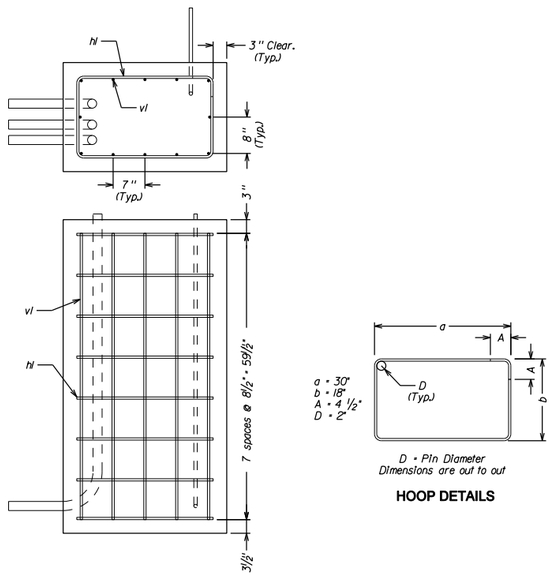
Cap all open ends of conduit before backfilling. For future reference, mark the locations of all conduit entering the footing on the side which the conduit enters. Locate marks near the top to ensure they remain visible after backfilling and shaping.

Install socket type bell ends on conduit protruding from the footing. Finished conduit (including bell end) is to protrude 5 to 6 inches from the top of footing.

Use Class C Structural Concrete for the footing. Meet the requirements of section 2403 for placement of the concrete. The top of the footing is to be level, and the top edges rounded with an edger. Provide forms of sufficient strength to prevent warping, bulging, or other deflections.

Epoxy coated reinforcement to meet the requirements of section 2404.

Conduit, excavation, backfilling, and site restoration to meet the requirements of section 2523.



HOOP DETAILS

Reinforcing Details

EPOXY COATED REINFORCEMENT QUANTITIES per footing				
BAR	QTY	SIZE	LENGTH	WEIGHT
v1	12	#4	59½	39.8
h1	7	#4	105	46.7
Total Weight				86.5

CONCRETE QUANTITIES per footing location	
Footing	1.22 cu yd
Pad	0.09 cu yd

DMS GROUND CABINET FOOTING DETAILS

ESTIMATED PROJECT QUANTITIES

ITEM NO.	ITEM CODE	ITEM	UNIT	TOTAL	AS BUILT QUAN.
1	2102-2625000	EMBANKMENT-IN-PLACE	CY	15.0	
2	2401-6745355	REMOVAL OF CONCRETE FOOTINGS OF HIGHWAY SIGNS	EACH	3	
3	2401-6745910	REMOVAL OF SIGN	EACH	3	
4	2402-2720000	EXCAVATION, CLASS 20	CY	115	
5	2403-0100000	STRUCTURAL CONCRETE (MISCELLANEOUS)	CY	35.3	
6	2404-7775005	REINFORCING STEEL, EPOXY COATED	LB	3,547	
7	2505-4008120	REMOVAL OF STEEL BEAM GUARDRAIL	LF	275.0	
8	2505-6000111	HIGH TENSION CABLE GUARDRAIL	LF	520.0	
9	2505-6000121	HIGH TENSION CABLE GUARDRAIL, END ANCHOR	EACH	4	
10	2505-6000131	HIGH TENSION CABLE GUARDRAIL, SPARE PARTS KIT	EACH	1	
11	2524-9081275	CONCRETE FOOTING FOR BREAKAWAY SIGN POST, 2'-8" DIA. X 7'-6"	EACH	1	
12	2524-9081290	CONCRETE FOOTING FOR BREAKAWAY SIGN POST, 2'-8" DIA. X 9'-0"	EACH	2	
13	2524-9275222	WOOD POSTS FOR TYPE A OR B SIGNS, 4 IN. X 6 IN.	LF	20.0	
14	2524-9281426	STEEL BREAKAWAY SIGN POSTS FOR TYPE A OR B SIGNS, W 12 X 26	LF	83.1	
15	2524-9380001	TYPE B SIGNS, EXTRUDED ALUMINUM STRUCTURAL PANEL	SF	195	
16	2524-9700000	SIGN, INSTALL ONLY	EACH	2	
17	2526-8285000	CONSTRUCTION SURVEY	LS	1.00	
18	2528-8400048	TEMPORARY BARRIER RAIL, CONCRETE	LF	1,070.0	
19	2528-8445110	TRAFFIC CONTROL	LS	1.00	
20	2528-8445113	FLAGGERS	EACH		
21	2528-9290004	CHANGEABLE MESSAGE SIGNS, PORTABLE	CDAY	2	
22	2533-4980005	MOBILIZATION	LS	1.00	
23	2551-0000110	TEMP CRASH CUSHION	EACH	3	
24	2599-9999005	GALVANIZED OVERHEAD SIGN TRUSS, 70 FT.	EACH	1	
25	2599-9999005	OVERHEAD DMS, INSTALL ONLY	EACH	1	
26	2599-9999009	REMOVE AND REINSTALL GUARDRAIL	LF	95.0	

STANDARD ROAD PLANS

105-4
04-20-10

The following Standard Road Plans shall be considered applicable to construction work on this project.

Number	Date	Title
BA-200	04-20-10	Steel Beam Guardrail Components
BA-351	04-20-10	High Tension Cable Guardrail
BA-401	04-20-10	Temporary Barrier Rail (Precast Concrete)
BA-500	04-20-10	Temporary Crash Cushions Sand Barrel
RM-42	04-20-10	Precast Handhole
SI-101	04-21-09	Locations - Type 'A' Signs
SI-102	10-20-09	Locations - Type 'B' Signs
SI-111	10-20-09	Support Structures - Wood Posts
SI-113	04-20-10	Support Structures - Steel Breakaway Posts
SI-121	04-20-10	Fabrication - Sign Legend Components
SI-123	10-20-09	Fabrication - Type 'B' Signs
SI-131	10-20-09	Installation - Type 'A' Signs
SI-132	04-20-10	Installation - Type 'B' Signs
TC-1	10-17-06	Work Not Affecting Traffic
TC-402	04-20-10	Shoulder Closure (Multi-Lane)
TC-418	04-20-10	Lane Closure on Divided Highway
TC-451	10-21-08	Temporary Road Closure on Divided Highway

ESTIMATE REFERENCE INFORMATION

ITEM NO.	ITEM CODE	DESCRIPTION
1	2102-2625000	EMBANKMENT-IN-PLACE Refer to Tabulation 190-52 and the "V" sheets. Material shall be provided by the Contractor.
2	2401-6745355	REMOVAL OF CONCRETE FOOTINGS OF HIGHWAY SIGNS Refer to Tabulation 190-62 and the Signing Notes. Method of Measurement: By count. Basis of Payment: Each.
3	2401-6745910	REMOVAL OF SIGN Refer to Tabulation 190-62 and the Signing Notes. Method of Measurement: By count. Basis of Payment: Each.
4 5 6	2402-2720000 2403-0100000 2404-7775005	EXCAVATION, CLASS 20 STRUCTURAL CONCRETE (MISCELLANEOUS) REINFORCING STEEL, EPOXY COATED Refer to Tabulation 190-52 and the "V" sheets.
7	2505-4008120	REMOVAL OF STEEL BEAM GUARDRAIL Refer to Tabulation 110-7A.
8 9 10	2505-6000111 2505-6000121 2505-6000131	HIGH TENSION CABLE GUARDRAIL HIGH TENSION CABLE GUARDRAIL, END ANCHOR HIGH TENSION CABLE GUARDRAIL, SPARE PARTS KIT Refer to Tabulation 108-9A. Spare parts kit shall be delivered to the Maintenance Facility in Ames.
11	2524-9081275	CONCRETE FOOTING FOR BREAKAWAY SIGN POST, 2'-8" DIA. X 7'-6" Refer to Tabulation 190-61.
12	2524-9081290	CONCRETE FOOTING FOR BREAKAWAY SIGN POST, 2'-8" DIA. X 9'-0" Refer to Tabulation 190-50.
13	2524-9275222	WOOD POSTS FOR TYPE A OR B SIGNS, 4 IN. X 6 IN. Refer to Tabulation 190-61.
14 15	2524-9281426 2524-9380001	STEEL BREAKAWAY SIGN POSTS FOR TYPE A OR B SIGNS, W 12 X 26 TYPE B SIGNS, EXTRUDED ALUMINUM STRUCTURAL PANEL Refer to Tabulation 190-50.
16	2524-9700000	SIGN, INSTALL ONLY Refer to Tabulation 190-61 and the Signing Notes. Method of Measurement: By count. Basis of Payment: Each.
17	2526-8285000	CONSTRUCTION SURVEY - -
18	2528-8400048	TEMPORARY BARRIER RAIL, CONCRETE Refer to Tabulation 108-33.
19	2528-8445110	TRAFFIC CONTROL Refer to the Traffic Control Plan.
20 21	2528-8445113 2528-9290004	FLAGGERS CHANGEABLE MESSAGE SIGNS, PORTABLE Per TC-451. Temporary Road Closure for placing truss

ESTIMATE REFERENCE INFORMATION

ITEM NO.	ITEM CODE	DESCRIPTION
22	2533-4980005	MOBILIZATION - -
23	2551-0000110	TEMP CRASH CUSHION Refer to Tabulation 108-30.
24	2599-9999005	GALVANIZED OVERHEAD SIGN TRUSS, 70 FT. Refer to Tabulation 190-52 and the "V" sheets. Method of Measurement : By count. Basis of Payment: Each. Payment includes furnishing all materials, equipment, tools, and labor necessary to complete the fabrication andinstallation of the truss, including the runway and ladder.
25	2599-9999005	OVERHEAD DMS, INSTALL ONLY Refer to Tabulation 190-52 and "V" sheets. Work shall consist of furnishing all labor, equipment, and materials to construct and dynamic message sign (DMS), generally including, but not limited to: - attachment of the DMS to the support structure - construction of the ground cabinet footing - installation of an RM-38 junction box - installation of the conduit between the sign support structure footing and the ground cabinet footing - installation of the ground cabinet - transport DMS and associated appurtenances from storage area The following items will be provided by the DOT or the DMS vendor: DMS, DMS-to-sign support structure attachment hardware, and ground cabinet. The Contractor shall assume full responsibility for the DOT furnished materials prior to accessing them. This assumption of responsibility shall be documented with an itemized invoice clearly identifying each item and shall be signed and dated by the Contractor and the Engineer. Lacking a signed invoice, the default date of assumption of responsibility for these materials shall be the date the contract between the DOT and the Contractor is signed. Upon the assumption of responsibility for any and all materials, the Contractor shall be wholly liable for safe handling, storage, and installation of the equipment. Any damaged equipment shall be replaced at the Contractor $\frac{5}{32}$s expense, without additional compensation. The DMS $\frac{5}{32}$s and related equipment are stored in the Iowa DOT Maintenance Facility in Ames, IA. METHOD OF MEASUREMENT: By count. BASIS OF PAYMENT: Each. This payment shall be full compensation for furnishing all material, equipment (except as noted above) and labor and for the performance of all work necessary, including transport of all provided materials from their present location, to provide the DMS installation.
26	2599-9999009	REMOVE AND REINSTALL GUARDRAIL Refer to Tabulation 110-7A. Guardrail shall be reinstalled to existing configuration. Method of Measurement: Linear feet to the nearest 0.5 foot by measuring along the front of the rail from bolt hole to bolt hole. Basis of Payment: Per linear foot.

04-03-01 203-2

During construction of this project, the contractor will be required to coordinate his operations with those of other contractors working within the same area. Other work in progress during the same period of the time will include construction of the following projects:

Project	Type of Work
IHSIPX-035-4(152)--08-85	Guardrail
IMN-035-4(129)87--0E-77	PCC Patching
MPIN-035-1(705)113--0N-85	PCC Joint and Crack Sealing

01-20-84 204-2

All holes resulting from operations of the contractor, including removal of guardrail posts, fence posts, utility poles, or foundation studies, shall be filled and consolidated to finished grade as directed by the engineer to prevent future settlement. The voids shall be filled as soon as practical - preferably the day created and not later than the following day. Any portion of the right-of-way or project limits (including borrow areas and operation sites) disturbed by any such operations shall be restored to an acceptable condition. This operation shall be considered incidental to other bid items in project.

8-20-85 204-3

All formed steel beam railing and posts that are to be removed and reinstalled on this project shall meet the approval of the Engineer before reinstalling. Painted steel beam railing and painted posts shall not be used on this project.

10-22-93 204-4

All guardrail materials that are removed and not reused on this project shall become the property of the contractor. Any material to be used on this project that is damaged due to the carelessness of the contractor shall be replaced at the contractor's expense without cost to the State of Iowa.

04-15-08 213-1

It shall be the contractor's responsibility to provide waste areas or disposal sites for excess material (excavated material or broken concrete) which is not desirable to be incorporated into the work involved on this project.

It shall be the contractor's responsibility to ensure that areas (including haul roads) selected for waste or disposal not impact 1) culturally sensitive sites or graves or 2) wetlands or "Waters of the U.S.", including streams or stream banks below the "ordinary high water mark", without an approved U.S. Army Corps of Engineers Section 404 Permit.

No payment for overhaul will be allowed for material hauled to these sites. No material shall be placed within the right-of-way, unless specifically stated in the plans.

01-20-84 232-5

The contractor shall not disturb desirable grass areas and desirable trees outside the construction limits. The contractor will not be permitted to park or service vehicles and equipment or use these areas for storage of materials. Storage, parking and service area(s) will be subject to the approval of the resident engineer.

06-22-84 213-3

All borrow areas, stockpile areas, haul roads and areas used for equipment on this project will require subsoil tillage to an average depth of 16 inches to 20 inches prior to placement of topsoil and/or stabilizing crop seeding. Such tillage shall be accomplished on maximum of three foot centers and at right angles to the finished slope of the borrow.

Equipment used to accomplish the tillage shall be equipped with an arrowhead-type shoe so as to provide lateral displacement and limit the movement of the subsoil to the surface. It shall be approved by the engineer for the use intended. This work will be considered incidental to other work on the project and no payment will be allowed.

It is intended that following subsoil tillage, the area remains in a "loosened" condition. Additional compaction or the operation of heavy equipment, other than required for topsoil placement and shaping shall not be allowed on areas which have received subsoil tillage.

04-15-08 232-3A

EROSION CONTROL: (Rural Seeding)

Following completion of work in a disturbed area, the area shall be seeded, fertilized, and mulched as follows:

SEEDING:

3 lbs. of Fescue or Fawn per 1000 sq. ft.

FERTILIZER:

17 lbs. of 13-13-13 (or equivalent) commercial fertilizer per 1000 sq. ft.

MULCH:

70 lbs. of dry cereal straw per 1000 sq. ft. All mulch shall be consolidated into the soil with a mulch stabilizer.

The preparation of the seedbed and the furnishing and application of seed, fertilizer, and mulch shall be considered incidental to mobilization and no extra compensation will be allowed.

06-22-84 251-2

The contractor is hereby notified that removal of any existing traffic markers, warning devices or guardrail barriers shall be scheduled subject to the approval of the Engineer. The contractor may be required to place temporary warning devices at certain locations where replacement features are not installed the same day during which any such removals take place.

01-20-84 253-1

Contractor is prohibited from using any established or other type median crossover on this project unless specifically designated for the contractor's use by this plan.

TABULATION OF MATERIALS FOR TYPE 'B' SIGNS

190-50
08-22-06

NO.	SIGN NUMBER RTE.	CO.	EXIT NO.	ROAD ID M,R,S	SEQ. NO.	DIR OF TRAVEL	SIGN LOCATION M.P.	SIGN LOCATION STATION	FAB INFO	SIGN WIDTH (ft)	SIGN HEIGHT (ft)	NEW AREA (SQ. ft)	WOOD POSTS 4X6 L (ft)	WOOD POSTS 4X6 M (ft)	WOOD POSTS 4X6 R (ft)	STEEL BREAKAWAY POSTS W8x21 L (ft)	W8x21 M (ft)	W8x21 R (ft)	FOOTING 2'8"x7'6" (each)	W12x26 L (ft)	W12x26 M_1 (ft)	W12x26 M_2 (ft)	W12x26 R (ft)	FOOTING 2'8"x9' (each)	INSTALLATION TYPE	INSTALLATION DIM "X" (ft)	INSTALLATION DIM "Y" (ft)	SEE SIGNING NOTES	REMARKS
	35	85	111	M	106	SB		637+50	NEW	13.0	12.5	162.5								28.5	27.8		26.8	3	1	28	7	1B	
					106A					13.0	2.5	32.5																	
												195.0								83.1				3					

TABULATION OF MATERIALS FOR OVERHEAD SIGN SUPPORT STRUCTURES

190-52
09-25-02

STRUCTURE TYPE/LENGTH	LOCATION MILEPOST	LOCATION STATION	DIR OF TRAVEL	INSIDE FOOTING OFFSET (Ft)	OUTSIDE FOOTING OFFSET (Ft)	DIMENSION 'L' INSIDE (Ft)	DIMENSION 'L' OUTSIDE (Ft)		FOUNDATION QUANTITIES EXCAVATION (CLASS 20) (Cu Yd)	REINFORCING STEEL (Lb)	REINFORCING EPOXY-COATED STEEL (Lb)	STRUCTURAL CONCRETE (Cu Yd)
70		629+55	SB	0	70	1	0		115		3547	35.34

TABULATION OF EXISTING SIGNS TO BE REINSTALLED

190-61
MODIFIED

SIGN DESCRIPTION	DIR OF TRAVEL	LOCATION STATION	No. of Posts	WOOD POSTS (TOTAL LIN FT) 4"x4"	WOOD POSTS (TOTAL LIN FT) 4"x6"	INSTALLATION TYPE	INSTALLATION DIM "X"	SEE SIGNING NOTES
SPEED LIMITS	SB	644+00	(1)			1	15	RR
I-35 ROUTE MARKER	SB	650+00	1		20	1	15	RR/PW

(1) USE EXISTING STEEL POST. REQUIRES NEW 2'8"x7'6" CONC FOOTING.

TABULATION OF EXISTING SIGNS TO BE REMOVED

190-62
08-24-06

SIGN NUMBER OR DESCRIPTION	LOCATION STATION (approximate)	DIR OF TRAVEL	TYPE "A" SIGN ASSEMBLY (each) (RA)	TYPE "B" SIGN ASSEMBLY (each) (RB)	REMOVE & REINSTALL EXISTING SIGNS TYPE "A" (each) (RR)	REMOVE & REINSTALL EXISTING SIGNS TYPE "B" (each) (RR)	CONCRETE FOOTING (each) (RF)	SUPPORT STRUCTURE & FOOTING (each) (RS)	APPLICABLE SIGNING NOTES	REMARKS
	629+55	SB		1			2		RB/RF	
SPEED LIMITS	629+55	SB			1		1		RR/RF	
I-35 ROUTE MARKER	629+55	SB			1				RR	

REMOVE or REMOVE & REINSTALL BEAM GUARDRAIL

(1) Lane(s) to which the installation is adjacent.

110-7A
04-19-05

Location No.	Location (1) Direction of Traffic	Location Station	Side	Steel Beam Guardrail Remove (Lin. Ft.)	Steel Beam Guardrail Remove & Reinstall (Lin. Ft.)	Posts Remove (No.)	Posts Remove & Reinstall (No.)	End Anchorage Remove (No.)	End Anchorage Remove & Reinstall (No.)	End Anchorage Type	Remarks
	SB	629+35	0		95		20		1	RE-76	(1)
	BOTH	629+55	M	275		44					

(1) REMOVE/REINSTALL AS NECESSARY TO CONSTRUCT NEW FOOTING

HIGH TENSION CABLE GUARDRAIL

(1) Lane(s) to which the installation is adjacent.

Refer to BA-351.

108-9A
04-20-10

Location No.	Location (1) Direction of Traffic	Location Station	Location Side	Dimensions Offset, D_0 Ft.	Dimensions Approach, C_A Ft.	Dimensions Obstacle, C_0 Ft.	Dimensions Trailing, C_T Ft.	Bid Items Protection Length ($C_A+C_0+C_T$) Ft.	Bid Items End Anchor No.	Remarks
	NB	627+10	M	10	180	70	10	260	2	
	SB	631+40	M	10	180	70	10	260	2	
								520	4	

CRASH CUSHIONS

(1) Lane(s) to which the installation is adjacent.

(2) Complete this section when using the Temporary Crash Cushion bid item. Refer to Standard Road Plan BA-500.

* Bid Item

108-30
04-20-10

No.	(1) Direction of Traffic	Location Station	Side	Obstacle Width Feet	Crash Cushion (Select One)* Temporary	Temporary Redirective	Temporary Severe Use	Permanent	Permanent Severe Use	Sand Barrel Details (2) (V) Length Feet	(W) Length Feet	(X) Length Feet	(Y) Length Feet	(Z) Length Feet	Earthwork* Excavation Class 10 Cu.Yds.	Embankment in Place Cu.Yds.	Remarks
1	SB	631+00	0	2	X					0	24.25	5.25	3.25	12.0		5	
2	NB	625+50	M	2	X					0	24.25	5.25	3.25	12.0		5	
3	SB	633+00	M	2	X					0	24.25	5.25	3.25	12.0		5	
					3											15	

TEMPORARY BARRIER RAIL

108-33
04-20-10

No.	Station To Station		Length LF	(Select One) Concrete BA-401	(Select One) Steel BA-400	Remarks
1	629+30	631+00	170	X		SB OUTSIDE
2	625+50	630+00	450	X		NB MEDIAN
3	628+50	633+00	450	X		SB MEDIAN
			1070			

SIGNING NOTES

SIGN-NOTE 09-25-02

GENERAL:

Materials and construction shall conform to the requirements of the applicable sections of the "Iowa Department of Transportation Standard Specifications for Highway and Bridge Construction, series 2009" plus General Supplemental Specifications; and applicable Supplemental Specifications, Developmental Specifications, and Special Provisions.

The exact location of installation for any item is subject to approval by the engineer.

Before excavation, the contractor shall check for the locations of utilities, drainage structures and other facilities in the construction area. Any damage to such facilities due to the contractor's activities shall be repaired at his expense.

During construction of this project the contractor will be required to coordinate his operations with those of other contractors working within the same area.

The following shall apply for both English and Metric projects.

All sign details shown in the plans are in English units because the signs are manufactured using English units. If the project is in Metric units, the outside dimensions of each sign are shown in both units.

All bid quantities have been shown in the units of the project.

The following tolerances will be allowed on all signs:

Accumulation error of not greater than +/- 0.50" per line of copy, not greater than +/- 0.50" for spacing between lines of copy, and the margin between lines of copy and the inside edge of the sign border.

The following tolerances will be allowed on each letter or numeral: (The measurements will be made to the nearest inch.)

nominal height	variation in height	variation in width
4" thru 12"	-1/8" to +3/8"	-1/4" to +1/4"
over 12"	-1/8" to +3/8"	-3/8" to +3/8"

Type B signs can be separated into two categories:
Major Guide Signs, and
Minor Guide Signs

Major Guide Signs include the advance and exit direction guide signs for an interchange or intersection.

Minor Guide Signs include all other guide signs such as next exits signs, supplemental guide signs, logo signs, exit gore signs, post-interchange mileage signs, ramp destination signs, and ramp logo signs for an interchange; and destination signs along sideroads.

Type A signs are not separated into categories, but special consideration should be given to regulatory signs.

Existing Type B signs shall remain in place until the new replacement signs are installed. If construction activities require the removal of a sign prior to installation of the replacement sign, the existing sign may be relocated to temporary posts, or a temporary plywood sign may be installed to replace the existing sign.

Existing non-regulatory Type A signs are NOT required to remain in place until installation of a replacement sign. Existing regulatory Type A signs, particulary Stop signs, should not be removed until the replacement sign is installed. This guideline may not apply if the traffic control plans have sufficient temporary signing.

During the replacement or modification of signs, no more than one of the major guide sign for each direction of travel at an interchange shall be out of service at any one time. No major guide sign shall be out of service for more than 8 hours. Minor guide signs shall not be out of service for more than 24 hours.

Existing signs and posts shall be removed within 24 hours following the installation of a new replacement sign.

SIGNING NOTES

SIGN-NOTE 09-25-02

In any case where the plans call for a new sign and posts to be installed at the same station location and offset as an existing sign, the new posts will be installed at a minimum of either 5 ft (1.5 m) ahead or behind the existing sign installation. Whenever posts for a replacement sign are erected directly in front of an existing sign, the new replacement sign shall be installed and the existing sign installation shall be removed within 24 hours of the time that the new posts are erected.

Where signs are located behind guardrail, the near edge of the sign shall be a minimum of 3 ft (1 m) behind the guardrail posts. The engineer may approve reducing this distance to a minimum of 1 ft (0.3 m) where field conditions warrant.

Unless otherwise noted, auxiliary panels such as exit number panels shall remain or be reattached to the sign using the existing mounting hardware. Also, when replacing an existing logo sign with a new logo sign, the business logo panel(s) will be removed from the existing sign and attached to the new sign as directed by the engineer. Care should be taken to prevent damage to the auxiliary or logo panels when removing and reattaching them. This work shall be considered incidental and no separate payment will be made.

In the location columns of Tabulation TYPE-B, the following symbols are used:
(R) = Ramp
(X) = Crossroad/Intersecting Road at Interchange
(M) = Metric Station Number
(L) = Left Side of Roadway

The following notes shall apply to the corresponding sign installations shown on the plan sheets and listed in the tabulations.

IB INSTALL NEW TYPE B SIGN
IA INSTALL NEW TYPE A SIGN

The Contractor shall install new signs at the locations identified in the plans.

For installation of new signs on existing posts:

- if the new sign is taller than the existing sign, the Contractor shall furnish the necessary hardware to extend the sign above the posts. Refer to Standard Road Plan SI-132.

- if the new sign is shorter that the existing sign,

for wood posts, the Contractor shall install the sign at the proper height and cut off the excess post length.

for steel posts, the Contractor shall install the sign at the top of the posts.

For installation of new signs on an existing sign support structure, refer to note (L).

All costs incurred for mounting hardware, extension of signs above existing posts, and cutting off wood posts shall be considered incidental to the price bid for Type A or Type B signs.

MS MODIFY EXISTING SIGN ASSEMBLY

The Contractor shall modify the copy on the existing sign as shown in the plan.

Existing copy which is removed shall delivered to a DOT storage area within 50 mi (80 km), as designated by the Engineer.

The Contractor shall install the new copy as needed to make the sign modifications.

All costs for copy removal, delivery to a DOT storage area, and installation of new copy shall be included in the price bid for sign modification.

SIGNING NOTES

SIGN-NOTE 09-25-02

MB INSTALL SPECIAL MOUNTING BRACKET

Special mounting brackets shall be installed at the locations identified in the plans. Refer to the tabulations TYPE-A, MILEPOST, and/or MNT-BRK details.

PW INSTALL NEW WOOD POSTS
PB INSTALL NEW BREAKAWAY STEEL POSTS AND FOOTINGS

New wood posts or breakaway steel posts and footings shall be installed at the locations indicated in the plans. Refer to tabulations TYPE-A and TYPE-B for post size and footing information.

If note (RR) accompanies either (PW) or (PB), an existing sign will be installed on the new posts.

RR REMOVE AND REINSTALL EXISTING SIGN:

Existing major Type B guide signs on posts shall not be removed until the new posts are installed. Then the sign shall be removed and promptly installed at the new location.

Existing major Type B guide signs on overhead support structures, minor Type B guide signs, plywood signs, and Type A signs may be removed and stored. The Contractor may remove the signs and transport them to a DOT storage area within 50 mi (80 km), as designated by the Engineer. The Contractor shall transport the signs back to the job site when ready for installation at the new location.

Signs damaged by the Contractor's activities shall be replaced at the Contractor's cost.

All costs for the sign removal, delivery to the DOT storage area (if applicable), and reinstallation shall be included in the price bid for remove and reinstall existing sign.

RA REMOVE EXISTING TYPE A SIGN ASSEMBLY
RB REMOVE EXISTING TYPE B SIGN ASSEMBLY

A Type A Sign Assembly consists of
- one or more signs,
- installed on one or more wood posts,
- either directly mounted to the post, or mounted to the post with special sign mounting brackets.

A Type B Sign Assembly consists of
- the main sign,
- all auxiliary signs and brackets, and
- the wood or steel posts.

Unless stated otherwise in the plans, all posts shall be removed with the signs and brackets.

The Contractor shall remove each sign assembly identified in the plans. Steel posts removed shall become the property of the Contractor. All other materials removed shall remain the property of the DOT.

Each sign assembly removed, shall be disassembled before delivery to the DOT. For Type A sign assemblies, the Contractor shall unbolt all signs, special mounting brackets, and posts from each other. For Type B sign assemblies, the Contractor shall unbolt all extruded aluminum panels, brackets, and posts from each other. Care should be taken not to damage the disassembled materials.

Holes remaining from the removal of wood posts shall be backfilled and restored to the normal surrounding conditions. This work shall be considered incidental and no separate payment will be made.

The Contractor shall deliver the removed signs, special sign mounting brackets, extruded aluminum panels, and wood posts to a DOT storage area within 50 mi (80 km), as designated by the Engineer.

SIGNING NOTES

SIGN-NOTE 09-25-02

The concrete footings for steel posts are not considered part of the sign assembly.

All costs for the sign assembly removal and disassembly, post removal (if applicable), restoration of the surrounding conditions, and delivery to the DOT storage area shall be included in the price bid for removal of sign.

RF REMOVE EXISTING CONCRETE FOOTING FOR STEEL POST

Existing concrete footings shall be removed to a depth of 1 ft (0.3 m) below ground. The remaining holes shall be backfilled and restored to the normal surrounding conditions. This work shall be considered incidental and no separate payment will be made.

RS REMOVE EXISTING TYPE B SIGN SUPPORT STRUCTURE

The following are considered Type B Sign Support Structures:

- overhead sign truss and footings,
- cantilevered sign truss and footing, or
- bridge mounted brackets.

For removal purposes, wood and steel posts are not considered Type B Sign Support Structures.

Unless otherwise directed in the plans, the existing overhead trusses, cantilevered trusses, and bridge brackets, which are removed, shall become the property of the Contractor. If stated in the plan, the Contractor shall deliver the overhead trusses, cantilevered trusses, and bridge brackets to a DOT storage area within 50 mi (80 km), as designated by the Engineer.

All costs for the sign support structure removal, delivery to the DOT storage area (if applicable), and restoration of the surrounding conditions shall be included in the price bid for removal of sign support structure and footing.

L MODIFY SIGN SUPPORT ANGLES NEEDED TO INSTALL SIGNS ON EXISTING SIGN SUPPORT STRUCTURES

Refer to the sign support structure details for information on the required angle brackets.

Provided all specifications are met, the existing sign support angles may be reused. Existing sign support angles to be reused shall only be installed on the sign support structure from which they were removed.

Any sign support angles removed and not reused shall become the property of the Contractor.

When reusing the existing sign support angles with a shorter replacement sign, the sign support angles may need to be trimmed. Refer to the sign support structure details to determine if and where to trim the sign support angles.

Existing fasteners shall not be reused. New stainless steel bolts and nuts shall be used to install the existing or new sign support angles to the sign support structure.

Payment will not be made for the removal of existing sign support angles. This work shall be included in the price bid for removal of the sign.

Payment will not be made for reinstallation, and/or modification of existing sign support angles; furnishing and installation of new sign support angles (if required); and furnishing and installation of new fasteners. This work shall be included in the price bid for Type B signs.

SIGNING NOTES

SIGN-NOTE
09-25-02

SIGN INSTALLATION QUALITY CONTROL NOTES

Post lengths have been derived from the proposed grading cross sections and shall be field verified.

Slight differences between the design template and the actual field conditions should be expected. These variations should be resolved by doing some localized grading and shaping. Material needed to meet the site requirements of SI-113 should be obtained from the footing excavation and/or the area immediately adjacent to the footing. Any reshaping work shall not substantially change the foreslopes or the drainage in the vicinity of the sign.

Significant differences between the design template and the actual field conditions need to be resolved in this manner. The location shall be surveyed and the actual template drawn on the cross section. Each post length shall be recalculated and compared to the maximum allowable leg length. If all of the leg lengths are less than or equal to the maximum allowable leg length, then the proposed post design will be sufficient. If any leg is greater than the maximum allowable leg length, then the cross section with the actual template drawn (including offsets and elevation from the survey shown) shall be submitted to the Engineer. The Engineer may forward this information on to the design Engineer in order to complete a new post design.

The Contractor shall install the footings & stub posts, and posts in accordance with the following tolerances:

-the elevation difference from the edge of pavement to the bottom of the sign shall be ±6 inches (150 mm) the dimension shown.

-the elevation difference between the top of the highest post and the lowest post at a site shall be less than 2 inches (50 mm).

Footing construction is the controlling activity that substantially affects the quality of the site installation. It is imperative that the elevation difference between the stubs is exactly the same as the elevation difference between the post lengths. The Contractor shall, upon request by the Engineer, submit documentation detailing the site field shots in order to verify site installation.

TABULATION OF SPECIAL EVENTS

102-15
10-29-02

Event	Location	Date
ISU Football vs. Northern Illinois	Jack Trice Stadium	09/04/10
ISU Football vs. Utah	Jack Trice Stadium	09/18/10
ISU Football vs. Northern Iowa	Jack Trice Stadium	09/25/10
ISU Football vs. Texas Tech	Jack Trice Stadium	10/02/10
ISU Football vs. Kansas	Jack Trice Stadium	10/30/10
ISU Football vs. Nebraska	Jack Trice Stadium	11/06/10
ISU Football vs. Missouri	Jack Trice Stadium	11/20/10

TRAFFIC CONTROL PLAN

108-23
04-04-89

Traffic will be maintained at all times.

Single lane closure per TC-418 will only be allowed from 8:15AM to 3:30PM.

Dual lane closure per TC-451 will only be allowed from 11:00PM to 5:00AM.

Lane closures outside of these time periods must have prior approval of the Engineer.

IOWA DEPARTMENT OF TRANSPORTATION	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM NARIGON	STORY COUNTY	PROJECT NUMBER ITS-035-5(100)111--25-85	SHEET NUMBER N.01	

5/4/2010 jnarigo W:\Projects\8503501010\TrafEng\Signing\25-85-0355-100\85035100_n01.sht

STA 630+00
EXISTING SIGN
REMOVE SIGN. POSTS
AND FOOTINGS

STA 637+50
INSTALL NES SIGN
POSTS AND FOOTINS

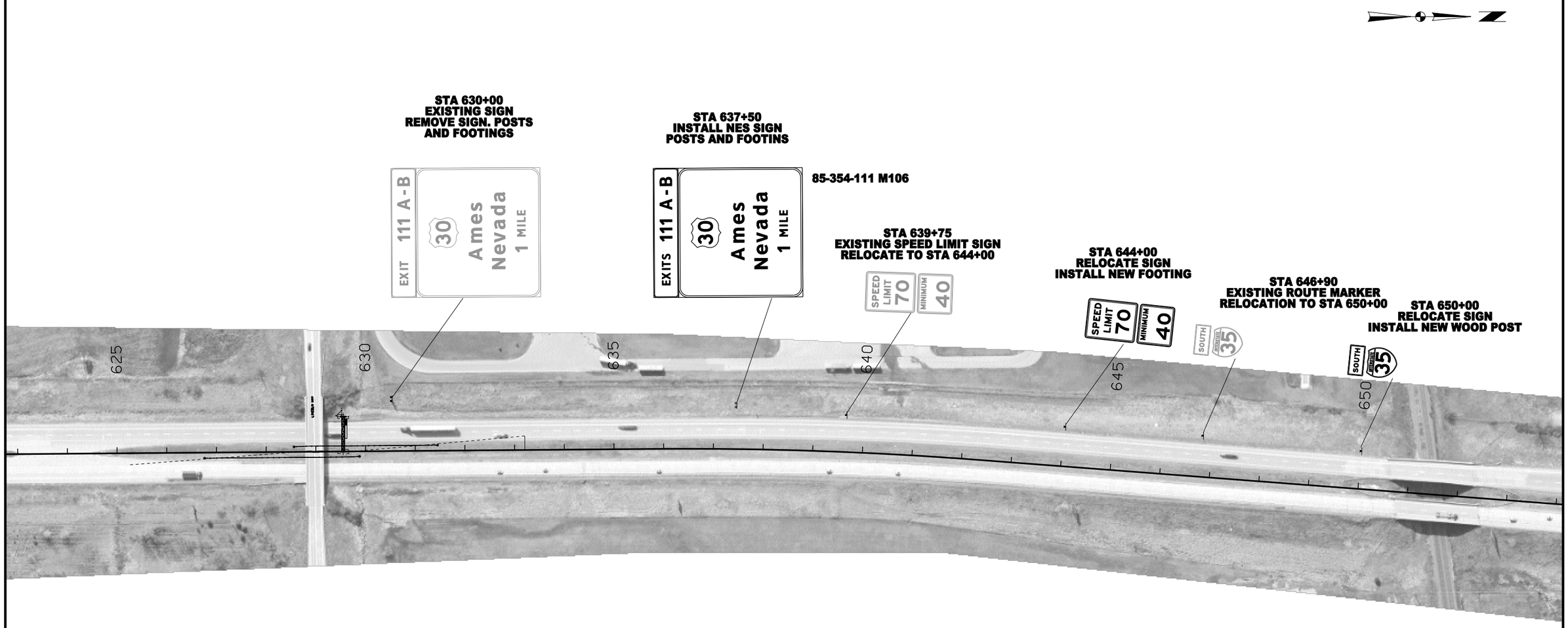
85-354-111 M106

STA 639+75
EXISTING SPEED LIMIT SIGN
RELOCATE TO STA 644+00

STA 644+00
RELOCATE SIGN
INSTALL NEW FOOTING

STA 646+90
EXISTING ROUTE MARKER
RELOCATION TO STA 650+00

STA 650+00
RELOCATE SIGN
INSTALL NEW WOOD POST



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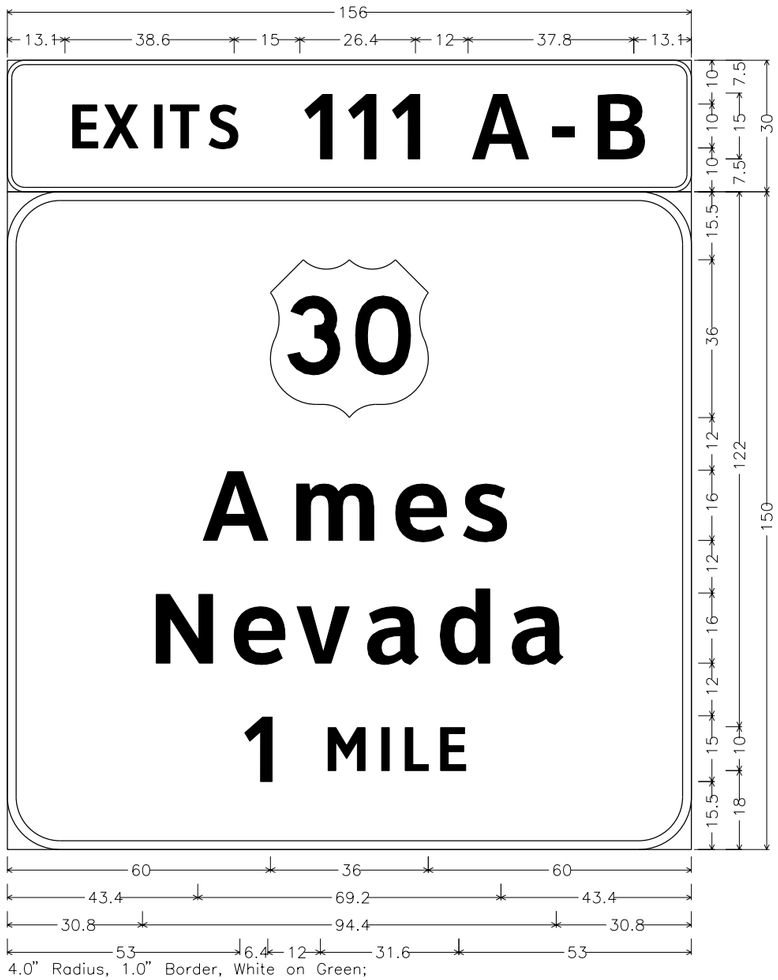
FEET

IOWA DEPARTMENT OF TRANSPORTATION	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM NARIGON	STORY COUNTY	PROJECT NUMBER ITS-035-5(100)111--25-85	SHEET NUMBER N.02

5/4/2010 jnarigo W:\Projects\8503501010\TrafEng\Signing\25-85-0355-100\85035100.n01.sht



4.0" Radius, 1.0" Border, White on Green;
[EXITS] ClearviewHwy-4-W; [111] ClearviewHwy-4-W; [A-B] ClearviewHwy-4-W;
12.0" Radius, 2.0" Border, White on Green;
[Ames] ClearviewHwy-5-W; [Nevada] ClearviewHwy-5-W; [1] ClearviewHwy-4-W;
[MILE] ClearviewHwy-4-W;

ANCHOR BOLT NOTES:

PROCEDURE FOR TIGHTENING ANCHOR BOLT NUTS ON OVERHEAD SIGN TRUSS.

1) THIS WORK SHALL BE PERFORMED ONLY ON DAYS WITH WINDS LESS THAN 15 MPH. ALL TIGHTENING OF THE NUTS IS TO BE DONE IN THE PRESENCE OF THE INSPECTOR. ONCE THE TIGHTENING PROCEDURE IS STARTED IT MUST BE COMPLETED ON ALL OF THE BASE PLATE NUTS WITHOUT PAUSE OR DELAY.

2) PROPERLY SIZED WRENCHES DESIGNED FOR TIGHTENING NUTS AND/OR BOLTS SHALL BE USED TO AVOID ROUNDING OR OTHER DAMAGE TO THE NUTS. ADJUSTABLE END OR PIPE WRENCHES MAY NOT BE USED.

3) BASE PLATE, ANCHOR RODS AND NUTS ARE TO BE FREE OF ANY DIRT OR DEBRIS.

4) APPLY STICK WAX OR BEES WAX TO THE THREADS AND BEARING SURFACES OF THE ANCHOR BOLT, NUTS, AND WASHERS.

5) TIGHTEN TOP NUTS SO THEY FULLY CONTACT THE BASE PLATE. TIGHTEN LEVELING NUTS TO SNUG TIGHT CONDITION. SNUG TIGHT IS DEFINED AS THE FULL EFFORT OF ONE PERSON ON A WRENCH WITH A LENGTH EQUAL TO 14 TIMES THE BOLT DIAMETER BUT NOT LESS THAN 18 INCHES. APPLY THE FULL EFFORT AS CLOSE TO THE END OF THE WRENCH AS POSSIBLE. PULL FIRMLY BY LEANING BACK AND USING ENTIRE BODY WEIGHT ON THE END OF THE WRENCH UNTIL THE NUT STOPS ROTATING. USE A MINIMUM OF TWO SEPARATE PASSES OF TIGHTENING. SEQUENCE THE TIGHTENING IN EACH PASS SO THAT THE NUT ON THE OPPOSITE SIDE, TO THE EXTENT POSSIBLE, WILL BE SUBSEQUENTLY TIGHTENED UNTIL ALL OF THE NUTS IN THAT PASS HAVE BEEN TIGHTENED.

6) TIGHTEN TOP NUTS TO SNUG TIGHT AS DESCRIBED FOR THE LEVELING NUTS.

7) MATCH-MARK THE TOP NUTS AND BASE PLATE USING PAINT, CRAYON, OR OTHER APPROVED MEANS TO PROVIDE A REFERENCE FOR DETERMINING THE RELATIVE ROTATION OF THE NUT AND BASE PLATE DURING TIGHTENING. USING A STRIKING OR HYDRAULIC WRENCH, FURTHER TIGHTEN THE TOP NUTS IN TWO PASSES AS LISTED IN THE FOLLOWING TABLE. USE A SEQUENCE OF TIGHTENING IN EACH PASS SO THAT THE NUT ON THE OPPOSITE SIDE, TO THE EXTENT POSSIBLE, WILL BE SUBSEQUENTLY TIGHTENED UNTIL ALL NUTS IN THAT PASS HAVE BEEN TURNED. DO NOT ROTATE THE LEVELING NUT DURING THE TOP NUT TIGHTENING.

ANCHOR BOLT SIZE	FIRST PASS	SECOND PASS	TOTAL ROTATION
LESS THAN OR EQUAL TO $1\frac{1}{2}\Phi$"	1/6 TURN	1/6 TURN	1/3 TURN
GREATER THAN $1\frac{1}{2}\Phi$"	1/12 TURN	1/12 TURN	1/6 TURN

8) LUBRICATE, PLACE AND TIGHTEN THE JAM NUTS TO SNUG TIGHT.

DESIGN STRESSES:

DESIGN STRESSES FOR MATERIALS ARE IN ACCORDANCE WITH A.A.S.H.T.O STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGN, LUMINAIRES AND TRAFFIC SIGNALS, SERIES OF 2001 INCLUDING INTERMS UP TO 2006.

STAINLESS STEEL U-BOLT NOTE:

UNLESS OTHERWISE NOTED ON THE PLAN, ALL STAINLESS STEEL U-BOLTS SHALL BE FURNISHED WITH STAINLESS STEEL REGULAR HEXAGONAL NUTS, JAM NUTS AND WASHERS UNDER BOTH HEADS AND NUTS. STAINLESS STEEL U-BOLTS SHALL MEET REQUIREMENTS OF ASTM A320, TYPE 304 OR ASTM F593 GROUP 1, 2, OR 3 CONDITION A.

STEEL NOTES:

STEEL SHAPES FOR D.M.S. CONNECTION DETAIL SHALL COMPLY WITH ASTM A572 GRADE 50, ALL OTHER STEEL SHAPES SHALL MEET THE REQUIREMENTS OF ASTM A36. ALL STEEL BARS, AND PLATES SHALL COMPLY WITH ASTM A36 EXCEPT MINOR PARTS APPROVED BY THE ENGINEER MAY COMPLY WITH ASTM A575 GRADE M1020. THE METAL BAR GRATING INCLUDING BEARING BAR, CROSS BAR, AND BANDING BARS SHALL COMPLY WITH THE REQUIREMENTS OF ASTM A1011 TYPE 2. ALL STEEL PIPE SHALL COMPLY WITH THE REQUIREMENTS OF ASTM A53 GRADE B, TYPE E OR S. STAINLESS STEEL BOLTS SHALL COMPLY WITH ASTM A320 OR F592 AS PER STANDARD SPECIFICATIONS.

ALL STEEL SECTIONS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123. PROVIDE VENT HOLES FOR GALVANIZING.

STEEL WELDING SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF THE AWS SPECIFICATIONS D1.1, STRUCTURAL WELDING CODE-STEEL.

MAGNETIC PARTICLE TESTING SHALL BE PREFORMED ON THE POST TO BASE PLATE AND STIFFENER FILLET WELDS.

SPECIFICATIONS:

DESIGN: A.A.S.H.T.O. STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, SERIES OF 2001 INCLUDING INTERMS UP TO 2006; STATE STANDARD FATIGUE DESIGN. AMERICAN INSTITUTE OF STEEL CONSTRUCTION, THIRTEENTH EDTION.

CONSTRUCTION: IOWA D.O.T. STANDARD SPECIFICATIONS, SERIES 2001 PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.

GENERAL NOTES:

ALL TRUSSES ARE DESIGNED FOR 30 lb/ft^2 WIND PRESSURE ON TRUSS MEMBERS AND 40 lb/ft^2 ON DMS. THE DMS IS LIMITED TO 4000 LBS. AND A WIDTH OF 29'-3, A HEIGHT OF 7'-10, AND A DEPTH OF 3'-11.

ALL PIPES, SHAPES, AND PLATES SHALL BE STRUCTURAL STEEL COMPLYING WITH THE ASTM SPECIFICATIONS NOTED.

SHOP DRAWINGS SHALL BE SUBMITTED FOR REVIEW.

SHOP DRAWINGS SHALL INDICATE LEFT AND RIGHT SUPPORTS.

THE PRECISE ALIGNING AND ERECTING OF ALL COMPONENTS OF THE OVERHEAD SIGN TRUSS AND ITS SUPPORTS SHALL BE CONSIDERED ESSENTIAL. THE CONTRACTOR SHALL SUBMIT DOCUMENTATION TO THE ENGINEER SHOWING THAT THE VARIOUS COMPONENTS HAVE BEEN MEASURED AND ARE LOCATED WITHIN THE TOLERANCES LISTED BELOW.

FOUNDATIONS AND ANCHOR BOLTS:

1) EACH FOUNDATION SHALL BE ACCURATELY LOCATED, WITH THE CENTER OF THE TWO ANCHOR BOLT GROUPS NOT MORE THAN 1 INCH FROM THE PLAN LOCATION IN THE DIRECTION PARALLEL WITH AND PERPENDICULAR TO THE OVERHEAD TRUSS.

2) THE TWO FOUNDATIONS SHALL BE PARALLEL, WITH THE DISTANCES ALONG THE OVERHEAD TRUSS BETWEEN CENTERS OF FRONT AND REAR ANCHOR BOLT GROUPS DIFFERING BY NOT MORE THAN 1 INCH.

3) ELEVATIONS OF THE TOP OF EACH FOUNDATION SHALL BE WITHIN 1 INCH OF PLAN ELEVATION.

4) ANCHOR BOLT GROUPS SHALL BE LOCATED ACCURATELY BY TEMPLATE OR OTHER POSITIVE MEANS, WITH CENTERS OF ADJACENT ANCHOR BOLT GROUPS WITHIN $\frac{3}{16}$ INCH OF THE CORRECT DISTANCE APART.

5) ANCHOR BOLTS SHALL BE PLUMB WITHIN $\frac{1}{4}$ INCH PER FOOT FROM VERTICAL.

6) ANCHOR BOLTS SHALL PROJECT ABOVE TOP OF FOUNDATION WITHIN $\frac{1}{4}$ INCH OF THE PLAN DIMENSION.

7) WELDING OF ANCHOR BOLTS SHALL NOT BE ALLOWED. THE CONTRACTOR SHALL OBTAIN A TEMPLATE FROM THE MANUFACTURER / FABRICATOR FOR PROPER PLACEMENT OF THE ANCHOR BOLTS.

COMPLETED STEEL STRUCTURE:

1) EACH TRUSS SUPPORT COLUMN SHALL BE PLUMB WITHIN $\frac{1}{16}$ INCH PER FOOT OF VERTICAL IN TWO PERPENDICULAR DIRECTIONS.

2) STICK-OUT OF EACH TRUSS LOWER CHORD SHALL BE WITHIN $2\frac{3}{4}$ AND $5\frac{1}{2}$ INCHES MEASURED FROM OUTER U-BOLT TO INSIDE OF CHORD END PLATE.

3) THE TRUSS SHALL BE SQUARE WITHIN SUPPORTS. HORIZONTAL LINE BETWEEN CHORDS SHALL BE LEVEL WITHIN $\frac{1}{16}$ INCH PER FOOT OF HORIZONTAL, AND VERTICAL LINE BETWEEN CHORDS SHALL BE PLUMB WITHIN $\frac{1}{16}$ INCH PER FOOT OF VERTICAL.

STRUCTURAL DESIGN

LICENSED PROFESSIONAL ENGINEER
James R. Hauber
18418
IOWA

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

James Hauber — 2-23-2010
Signature — Date

James R. Hauber
Printed or Typed Name

My license renewal date is December 31, 2010

Pages or sheets covered by this seal: V.1 THRU V.10

DESIGN FOR

GALVANIZED OVERHEAD SIGN TRUSS WITH GALVANIZED STEEL SUPPORTS

GENERAL NOTES

STA. 629+55.00 — FEBRUARY, 2010

STORY COUNTY

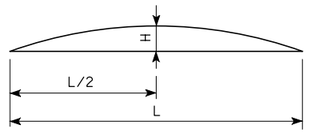
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 1 OF 10 FILE NO. 30499 DESIGN NO. 110

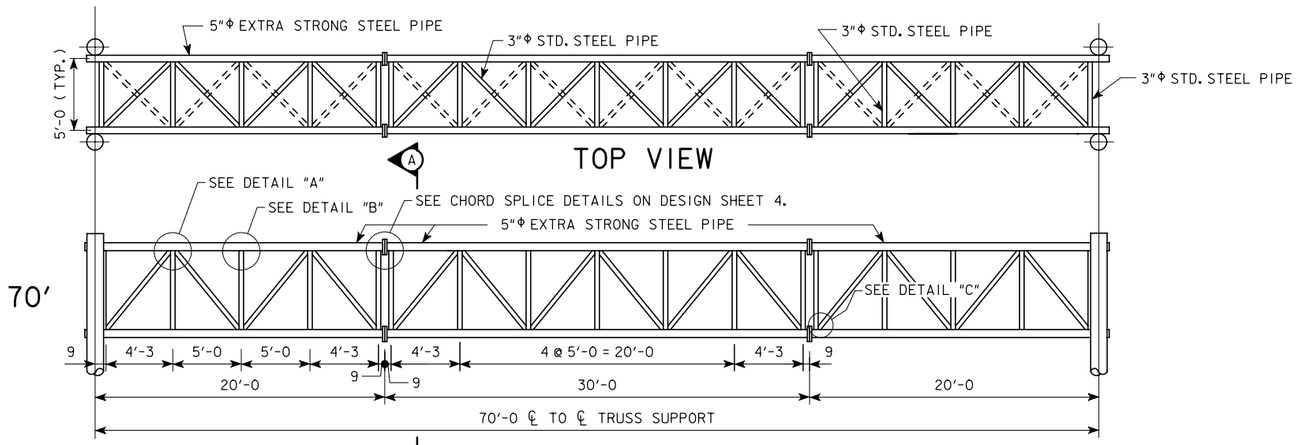
DESIGN TEAM JRH / JDC | STORY COUNTY | PROJECT NUMBER ITS-035-5(100)111--25-85 | SHEET NUMBER V.1

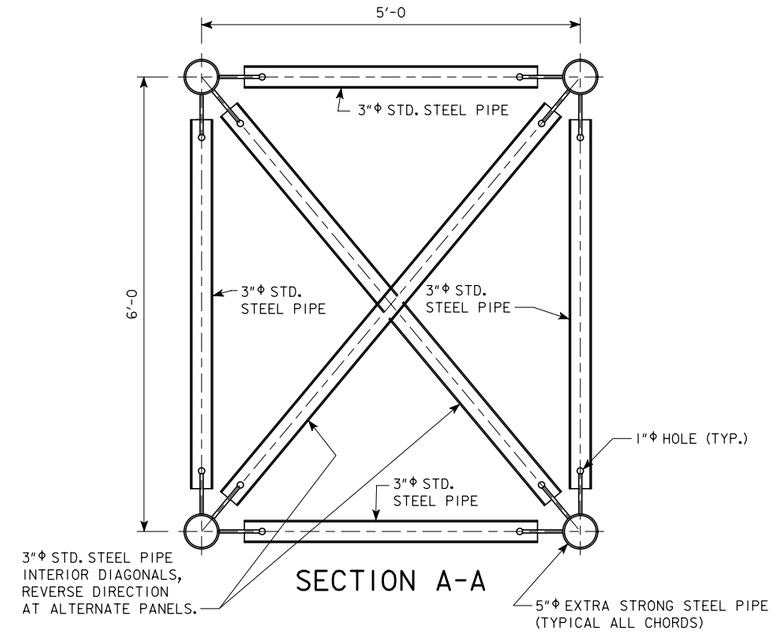
5/4/2010 1:26:03 PM jcolle W:\Projects\8503501010\BRFinal\85035100.brg 850110s001 11x17bw_pdf.plt

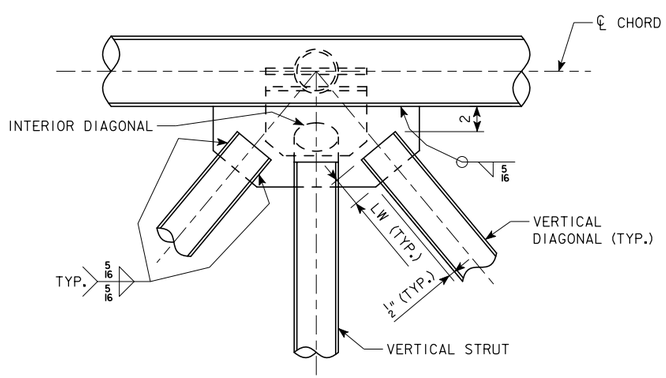
SPAN L	CAMBER H
70′	$1\frac{3}{8}$



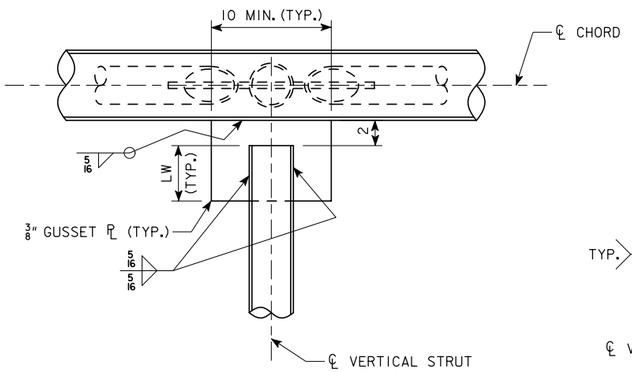
CAMBER DIAGRAM



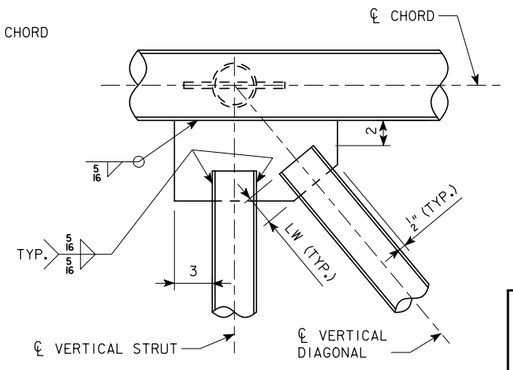




DETAIL "A"
FOR 3"Φ STD. STEEL PIPE
LW (MIN.) = $3\frac{1}{2}$"



DETAIL "B"
FOR 3"Φ STD. STEEL PIPE
LW (MIN.) = $3\frac{1}{2}$"



DETAIL "C"
FOR 3"Φ STD. STEEL PIPE
LW (MIN.) = $3\frac{1}{2}$"

DESIGN FOR
GALVANIZED OVERHEAD SIGN TRUSS WITH GALVANIZED STEEL SUPPORTS

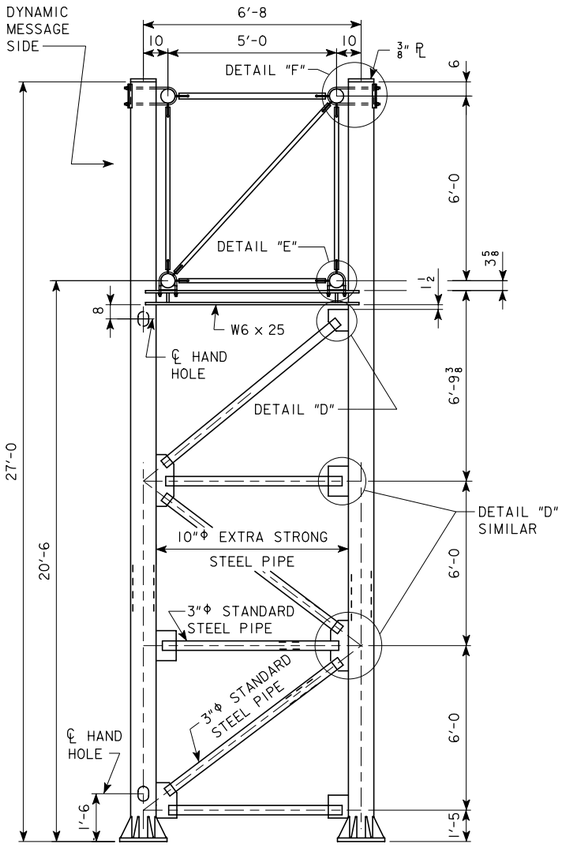
ELEVATION VIEWS

STA. 629+55.00 FEBRUARY, 2010

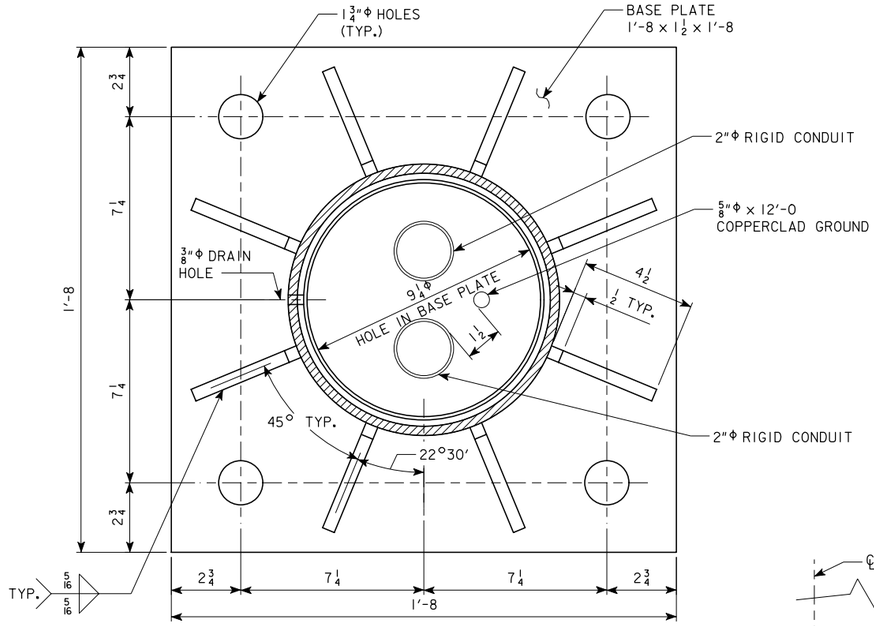
STORY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

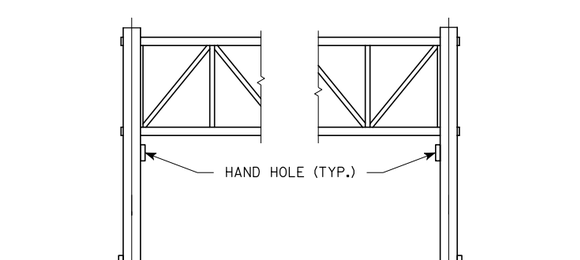
DESIGN SHEET NO. 2 OF 10 FILE NO. 30499 DESIGN NO. 110



END VIEW OF TRUSS SUPPORT

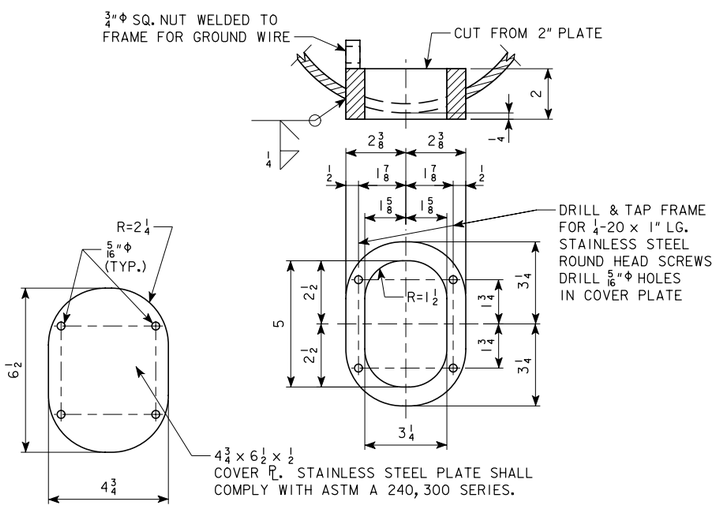


BASE PLATE PLAN

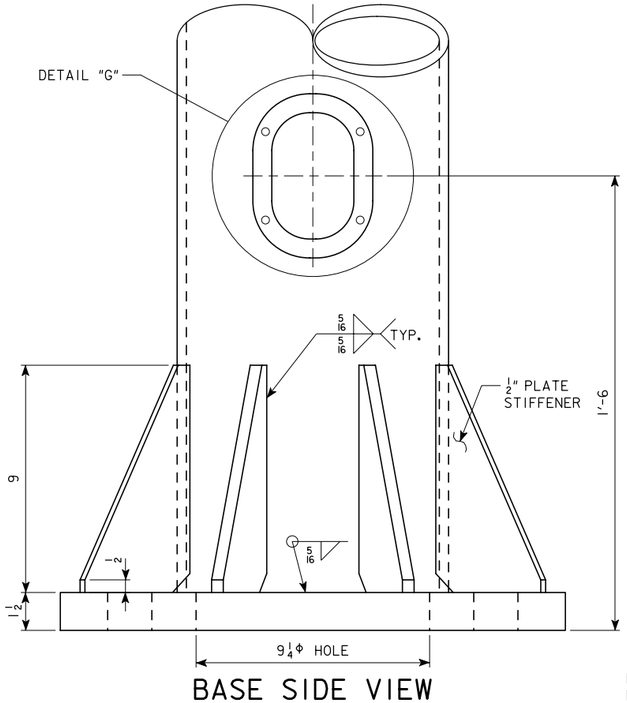


PART ELEVATION

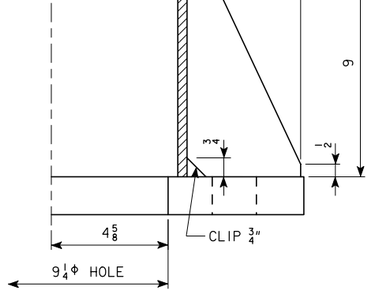
NOTE: HAND HOLES SHALL BE IN BOTH END TRUSS SUPPORTS AND ON DYNAMIC MESSAGE SIDE ONLY.



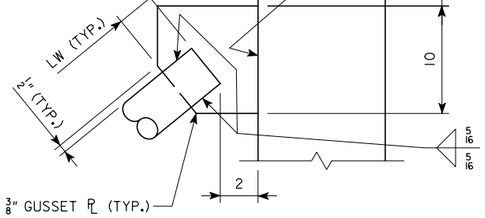
DETAIL "G"



BASE SIDE VIEW



BASE CROSS-SECTION



DETAIL "D"

FOR 3"Φ STD. STEEL PIPE LW (MIN.) = 3 1/2"

NOTE: SEE DESIGN SHEET 4 FOR DETAILS "E" & "F".

DESIGN FOR

GALVANIZED OVERHEAD SIGN TRUSS WITH GALVANIZED STEEL SUPPORTS

BASE PLATE DETAILS

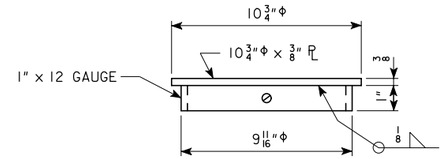
STA. 629+55.00 FEBRUARY, 2010

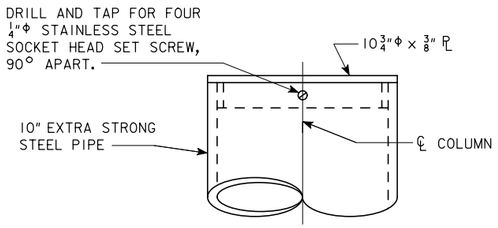
STORY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

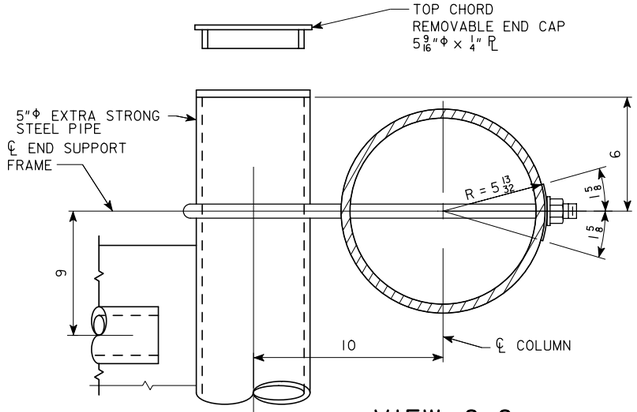
DESIGN SHEET NO. 3 OF 10 FILE NO. 30499 DESIGN NO. 110

DESIGN TEAM JRH / JDC	STORY COUNTY	PROJECT NUMBER ITS-035-5(100)111--25-85	SHEET NUMBER V.3

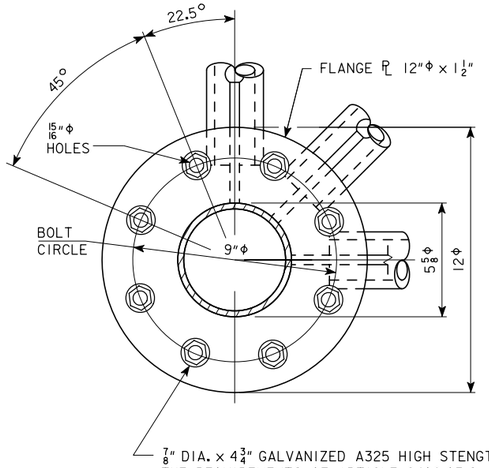


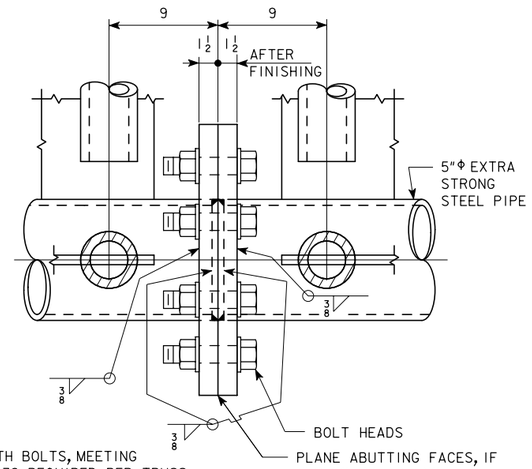


END COLUMN TOP DETAIL



VIEW C-C

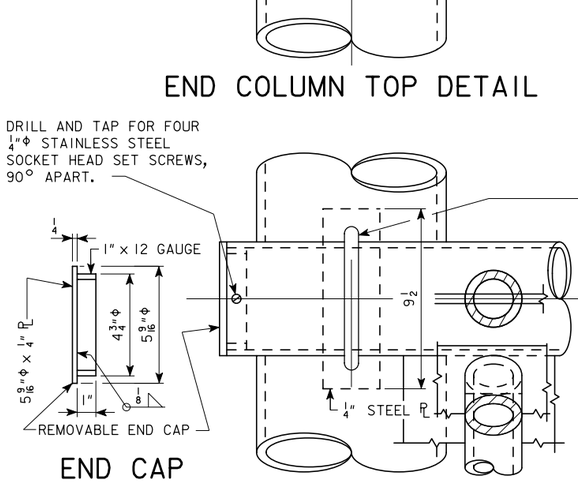




7/8" DIA. x 4 3/4" GALVANIZED A325 HIGH STENGTH BOLTS, MEETING THE REQUIREMENTS OF ARTICLE 2408.03,S. 32 REQUIRED PER TRUSS SPLICE, 64 HARDENED WASHERS REQUIRED PER TRUSS SPLICE. HARDENED WASHER WILL BE PROVIDED UNDER BOTH HEAD AND NUT OF BOLT
32 - 7/8" DIA. HEAVY HEX NUTS REQUIRED PER TRUSS SPLICE. DRILL
8 - 15/16" DIA. HOLES IN EACH FLANGE. HIGH STRENGTH BOLT SHALL BE TENSIONED BY TURN-OF-NUT METHOD.

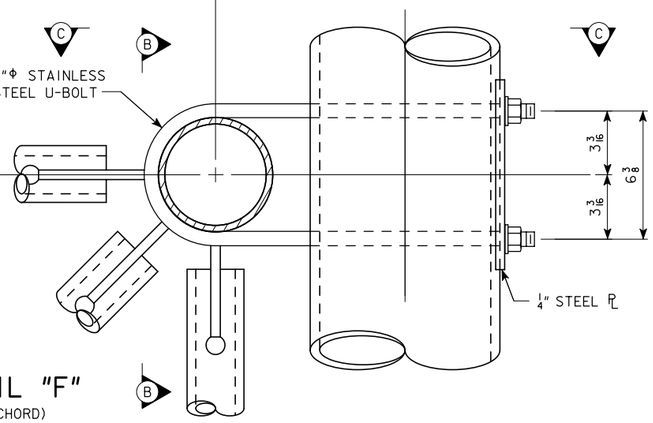
CHORD SPLICE

NOTE:
FLANGES MAY BE WELDED TO CHORD MEMBERS AFTER FINISHING PROVIDED PROPER ALIGNMENT IS SECURED.

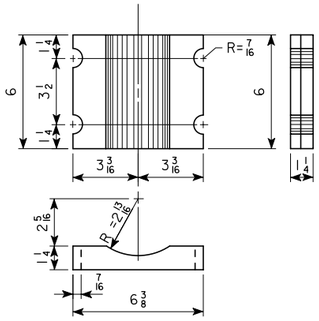


END CAP

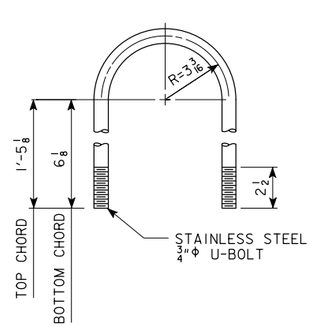
VIEW B-B



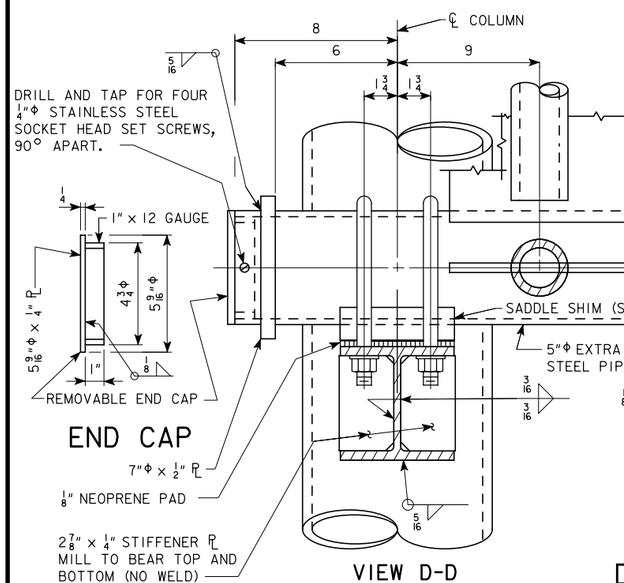
DETAIL "F"
(TOP CHORD)



SADDLE SHIM DETAIL

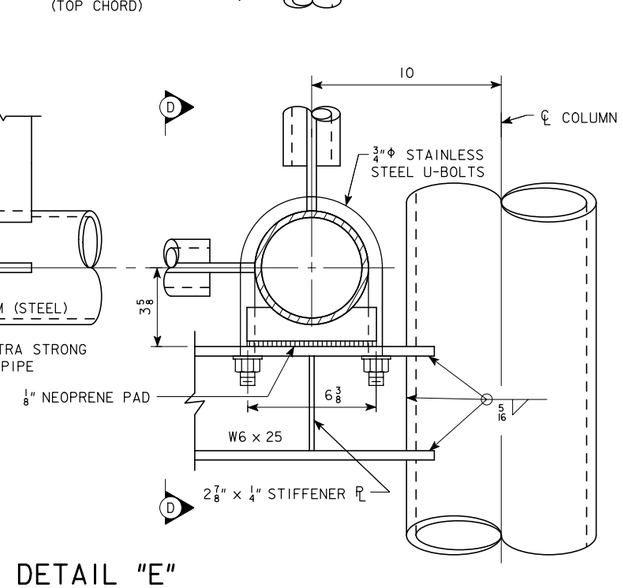


STAINLESS STEEL U-BOLT DETAIL



END CAP

VIEW D-D



DETAIL "E"
(BOTTOM CHORD)

NOTE: SEE DESIGN SHEET 3 FOR LOCATION OF DETAILS "E" & "F".

DESIGN FOR
GALVANIZED OVERHEAD SIGN TRUSS WITH GALVANIZED STEEL SUPPORTS

TRUSS SUPPORT & CHORD SPLICE DETAILS

STA. 629+55.00 FEBRUARY, 2010

STORY COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 4 OF 10 FILE NO. 30499 DESIGN NO. 110

DESIGN TEAM JRH / JDC | STORY COUNTY | PROJECT NUMBER ITS-035-5(100)111--25-85 | SHEET NUMBER V.4

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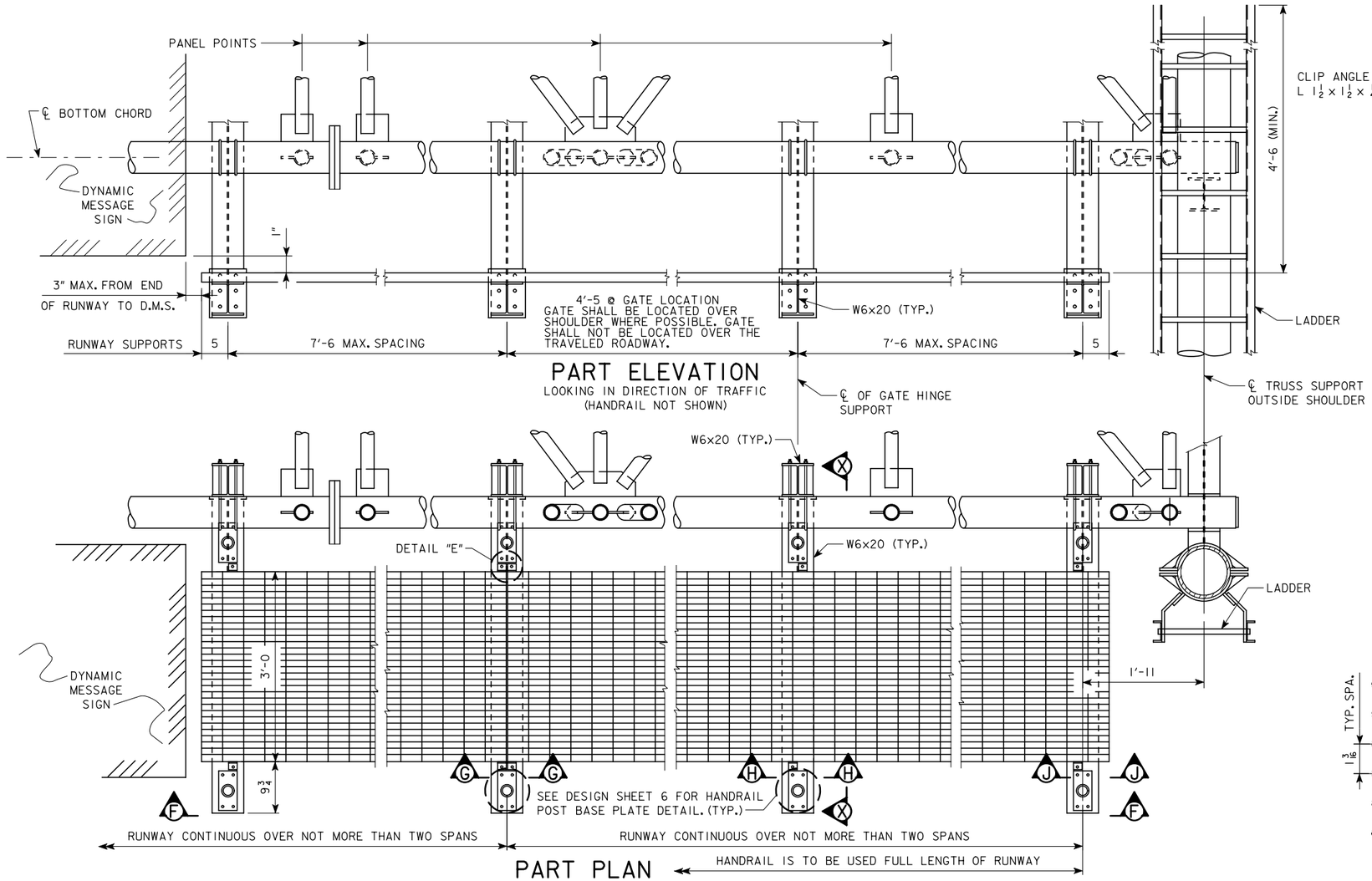


PART ELEVATION

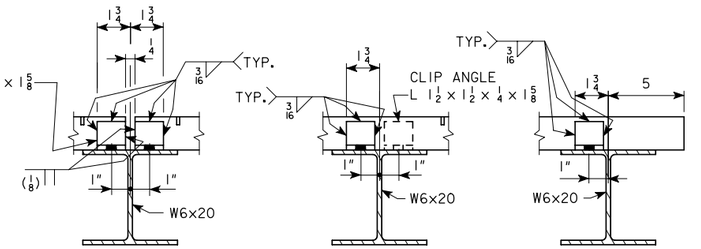
LOOKING IN DIRECTION OF TRAFFIC
(HANDRAIL NOT SHOWN)

PART PLAN

(HANDRAIL NOT SHOWN)

VIEW F-F

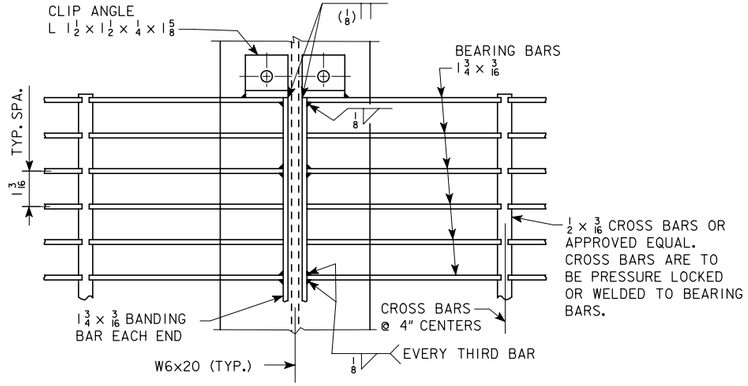
(SHOWING HANDRAIL AND GATE DETAILS)
(GATE IS LOCATED ON SIDE FARTHEST FROM TRUSS ONLY)



SECTION G-G SECTION H-H SECTION J-J

NOTE:
7/16"Φ HOLE IN CLIP ANGLE AND 7/16"Φ HOLE IN W6x20 FOR 3/8"Φ GALVANIZED A325 BOLT. ADJUST CLIP SO GRATING BEARS ON BEAM.

NOTE:
THE GALVANIZED METAL BAR GRATING INCLUDING BEARING BAR, CROSS BARS, AND BANDING BARS SHALL COMPLY WITH THE REQUIREMENTS OF ASTM A1011 TYPE 2.



DETAIL "E"

NOTES:
SEE DESIGN SHEET 6 FOR SECTION X-X.
SEE DESIGN SHEET 7 FOR LADDER DETAILS.

DESIGN FOR

GALVANIZED OVERHEAD SIGN TRUSS WITH GALVANIZED STEEL SUPPORTS

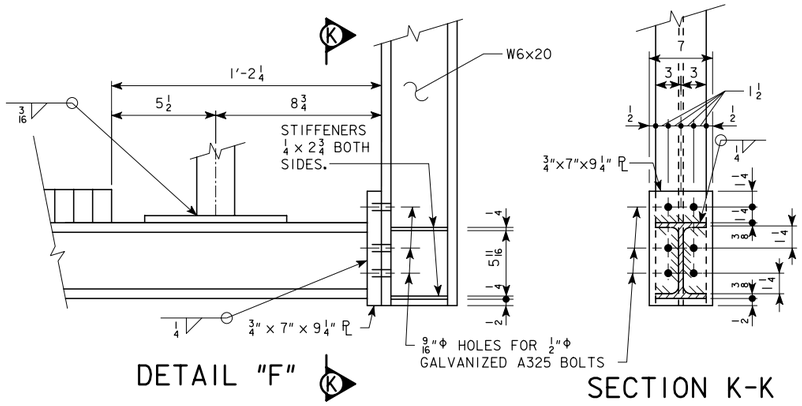
RUNWAY DETAILS

STA. 629+55.00 FEBRUARY, 2010

STORY COUNTY

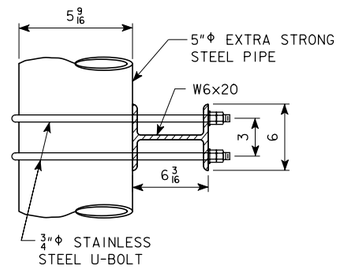
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 5 OF 10 FILE NO. 30499 DESIGN NO. 110

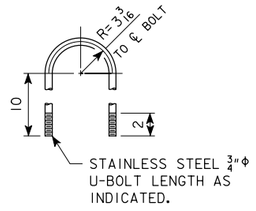


DETAIL "F"

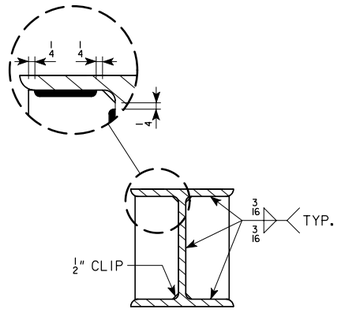
SECTION K-K



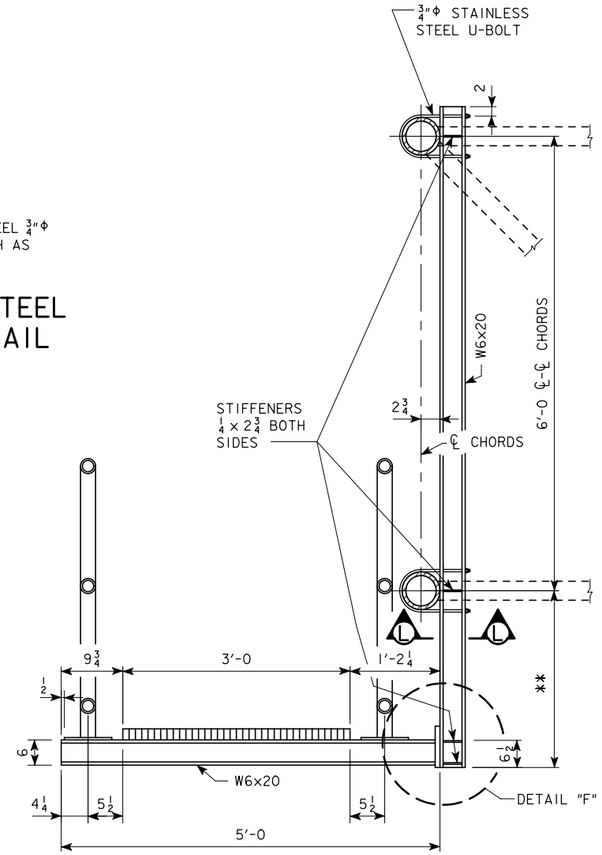
SECTION L-L



STAINLESS STEEL U-BOLT DETAIL

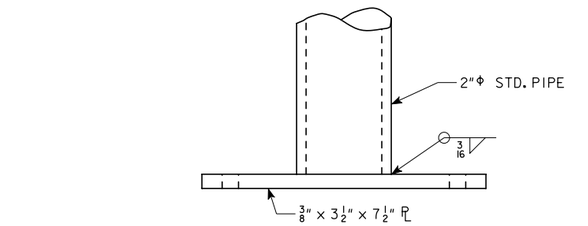


TYPICAL STIFFENER DETAIL

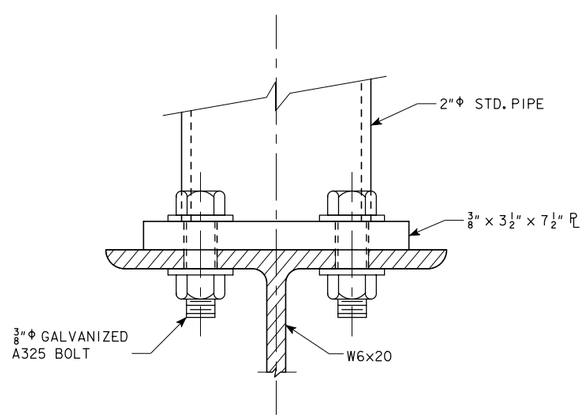


SECTION X-X
TYPICAL RUNWAY SECTION

** THE IOWA D.O.T. RESEARCH AND TECHNOLOGY BUREAU SHALL PROVIDE THIS DIMENSION AFTER YEAR 6 PURCHASE AGREEMENT FOR DYNAMIC MESSAGE SIGNS IS CONTRACTED AND ATTACHMENT HARDWARE DESIGNED. THE DIMENSION SHALL BE APPROVED BY THE IOWA D.O.T. OFFICE OF BRIDGES AND STRUCTURES.



HANDRAIL POST BASE PLATE



END ELEVATION OF HANDRAIL POST BASE

DESIGN FOR
GALVANIZED OVERHEAD SIGN TRUSS WITH GALVANIZED STEEL SUPPORTS

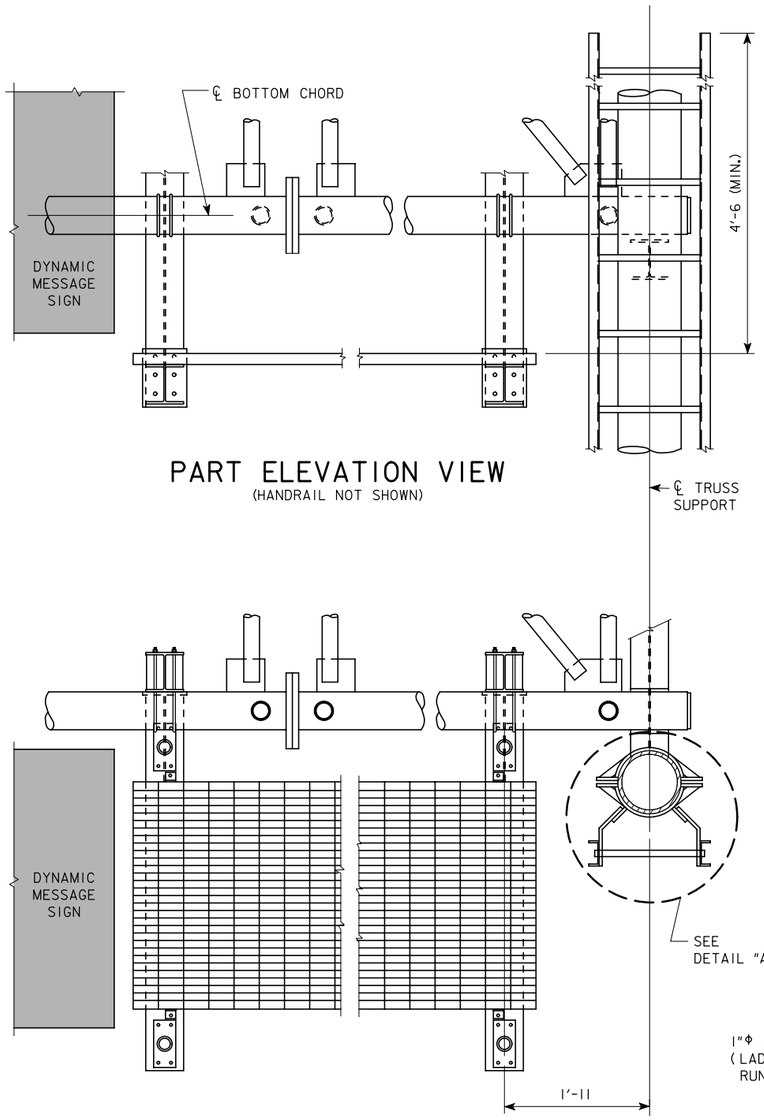
RUNWAY DETAILS

STA. 629+55.00 FEBRUARY, 2010

STORY COUNTY

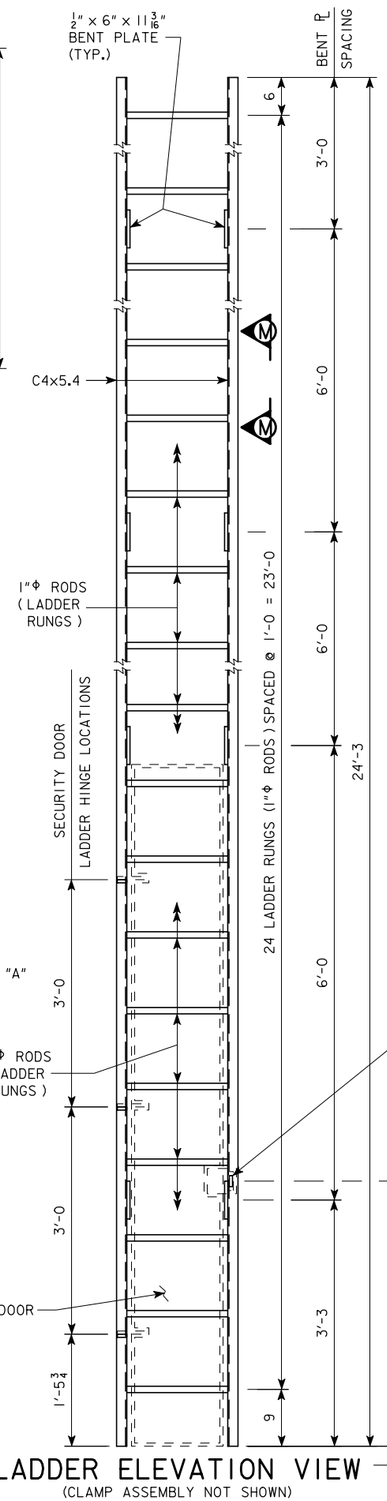
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 6 OF 10 FILE NO. 30499 DESIGN NO. 110

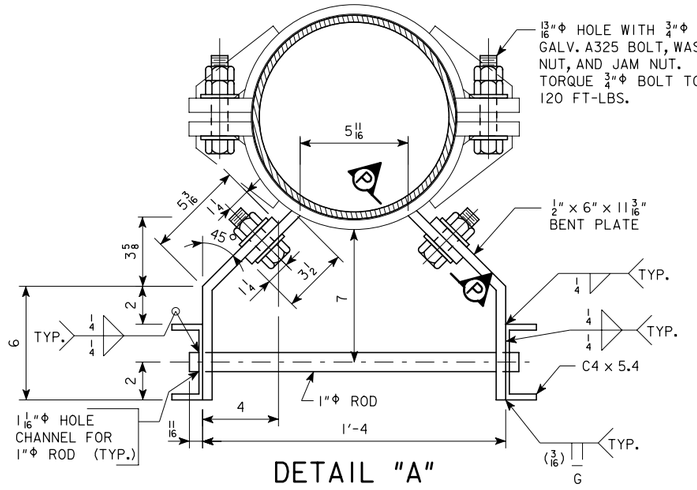


PART ELEVATION VIEW
(HANDRAIL NOT SHOWN)

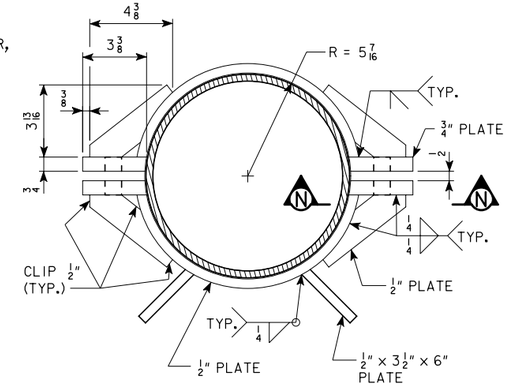
PART PLAN VIEW
(HANDRAIL NOT SHOWN)



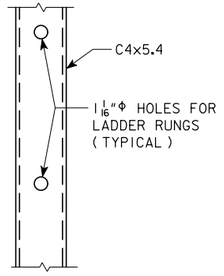
LADDER ELEVATION VIEW
(CLAMP ASSEMBLY NOT SHOWN)



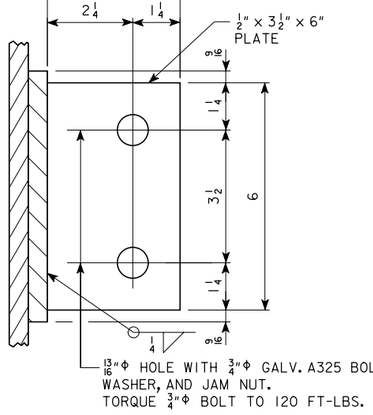
DETAIL "A"



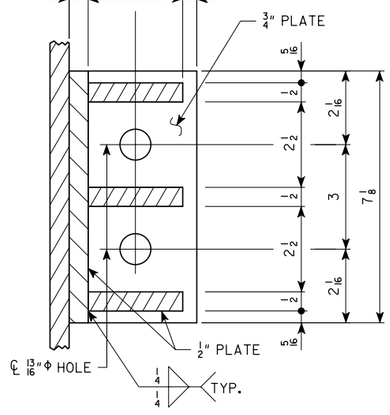
CLAMP ASSEMBLY
(3 REQUIRED PER LADDER)



VIEW M-M



SECTION P-P



SECTION N-N

NOTE: SEE DESIGN SHEET 8 FOR LADDER SECURITY DOOR DETAILS.

DESIGN FOR

GALVANIZED OVERHEAD SIGN TRUSS WITH GALVANIZED STEEL SUPPORTS

LADDER DETAILS

STA. 629+55.00 FEBRUARY, 2010

STORY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 7 OF 10 FILE NO. 30499 DESIGN NO. 110

DESIGN TEAM JRH / JDC | STORY COUNTY | PROJECT NUMBER ITS-035-5(100)111--25-85 | SHEET NUMBER V.7

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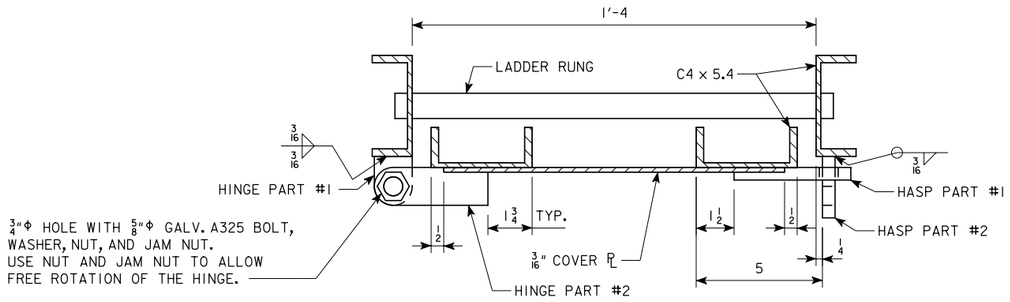
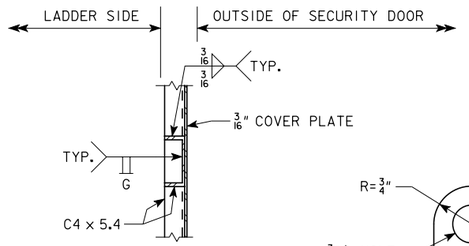
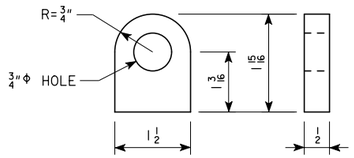


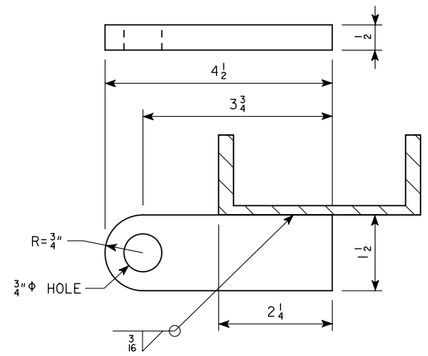
SECTION A-A



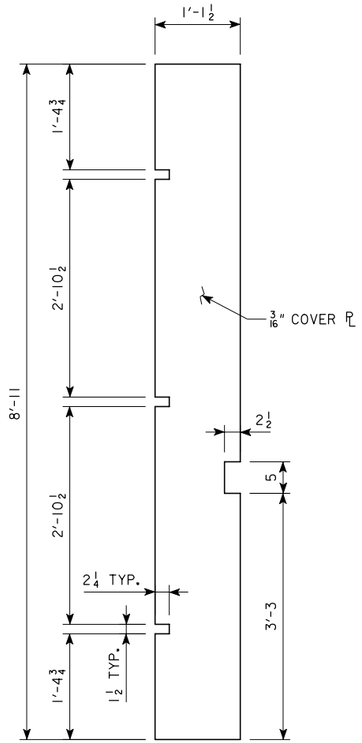
SECTION B-B



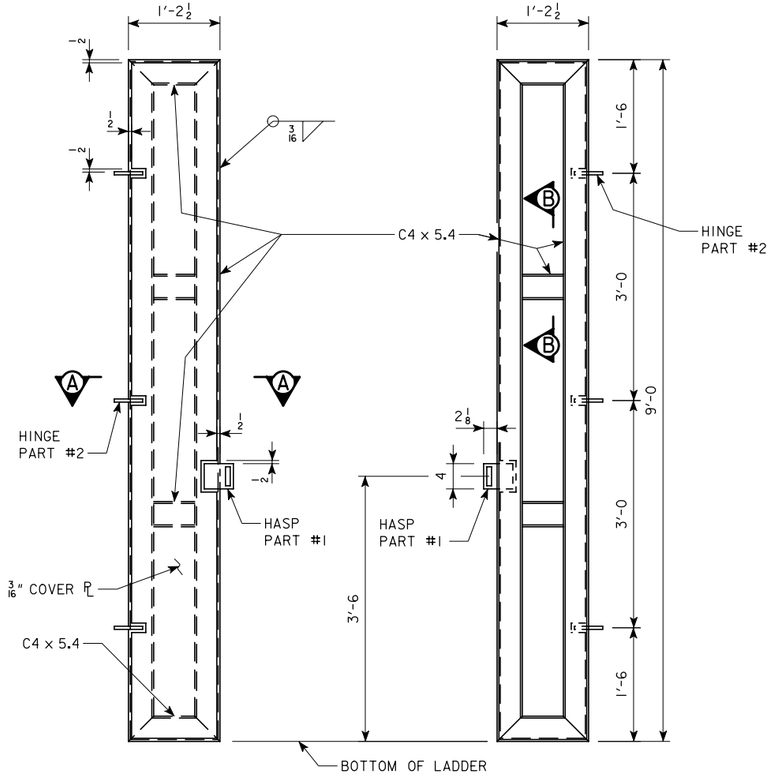
HINGE PART #1



HINGE PART #2

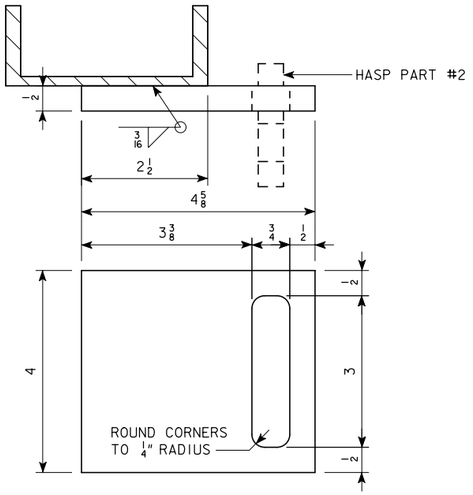


3/16" COVER PL DETAIL

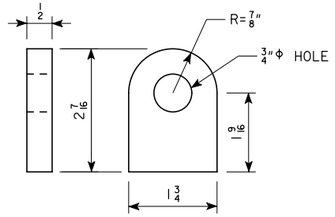


SECURITY DOOR ELEV.
FRONT SIDE OF DOOR

SECURITY DOOR ELEV.
BACK (LADDER) SIDE OF DOOR



HASP PART #1



HASP PART #2

DESIGN FOR

GALVANIZED OVERHEAD SIGN TRUSS WITH GALVANIZED STEEL SUPPORTS

LADDER SECURITY DOOR DETAILS

STA. 629+55.00 FEBRUARY, 2010

STORY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 8 OF 10 FILE NO. 30499 DESIGN NO. 110

DESIGN TEAM JRH / JDC | STORY COUNTY | PROJECT NUMBER ITS-035-5(100)111--25-85 | SHEET NUMBER V.8

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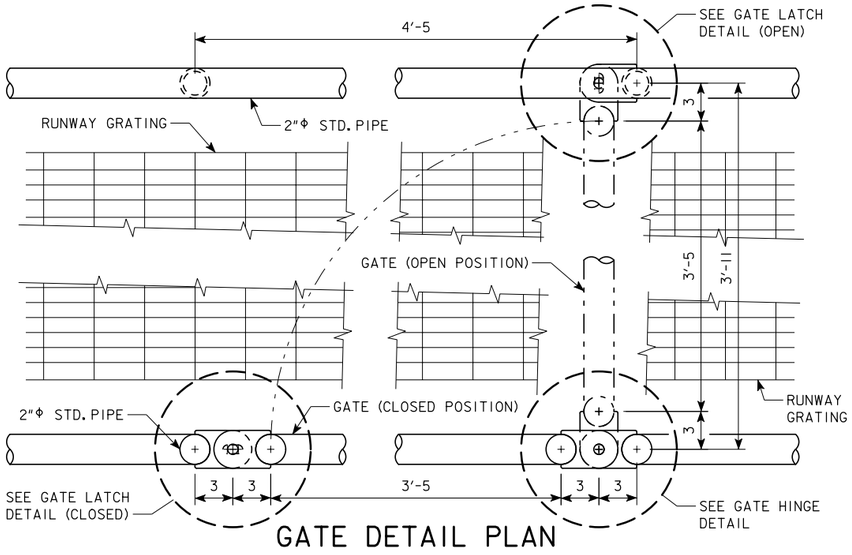
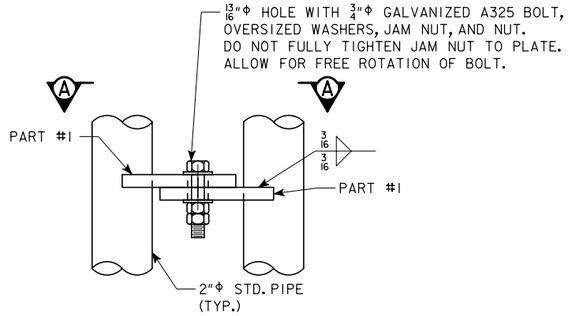
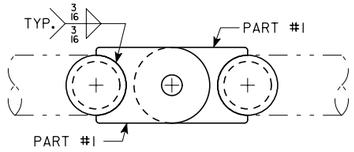


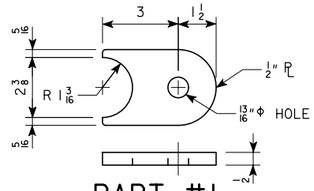
GATE DETAIL PLAN



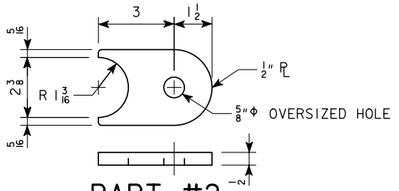
GATE HINGE DETAIL



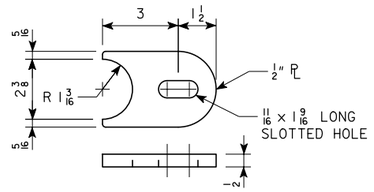
VIEW A-A



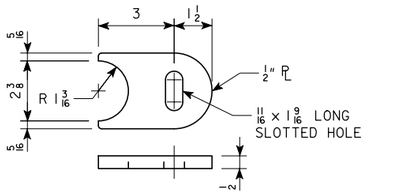
PART #1



PART #2



PART #3



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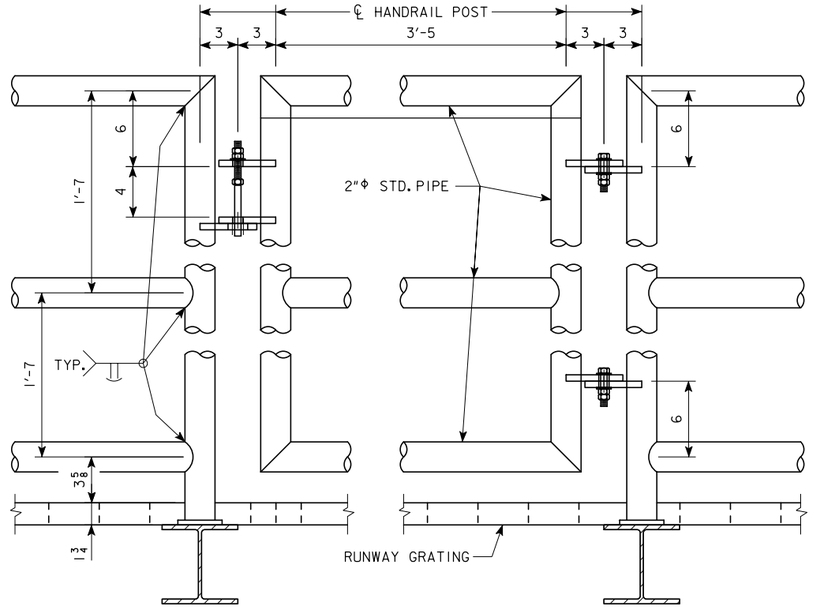
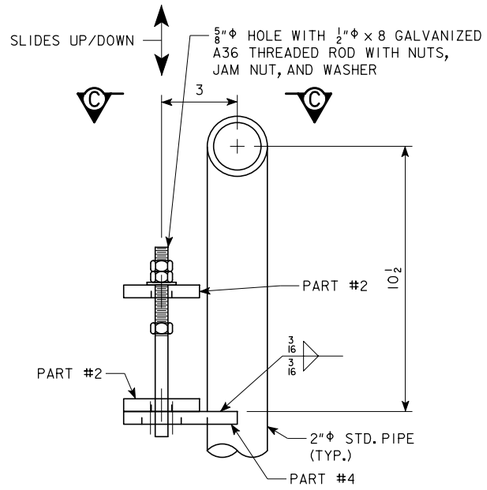
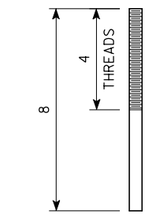


GATE DETAIL ELEVATION

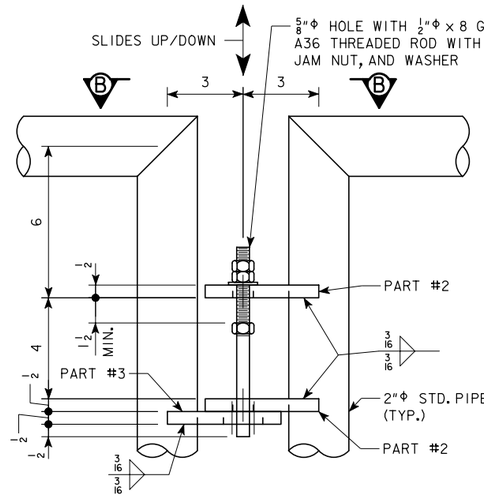
GATE LOCATED OVER
SHOULDER OF ROADWAY
AND OPENS TOWARDS LADDER



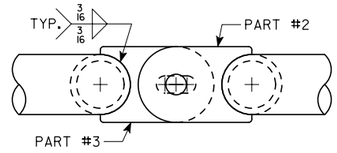
GATE LATCH DETAIL (OPEN)



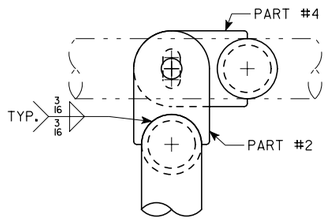
1 1/2"Φ A36 ROD GALVANIZED



GATE LATCH DETAIL (CLOSED)



VIEW B-B



VIEW C-C

DESIGN FOR

GALVANIZED OVERHEAD SIGN TRUSS WITH GALVANIZED STEEL SUPPORTS

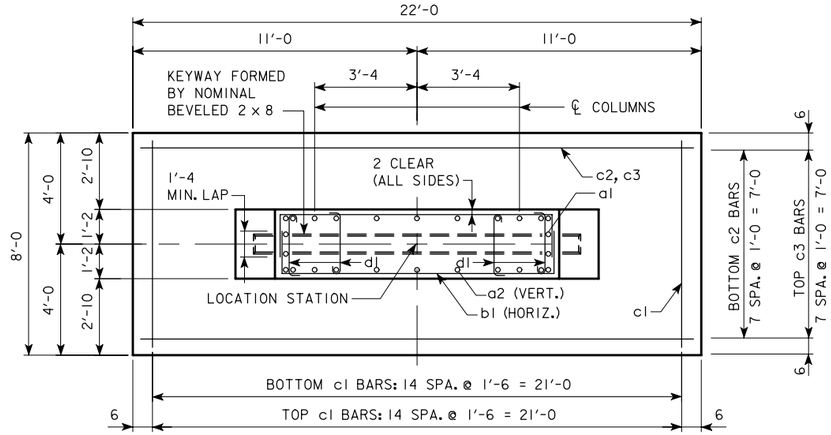
RUNWAY GATE DETAILS

STA. 629+55.00 FEBRUARY, 2010

STORY COUNTY

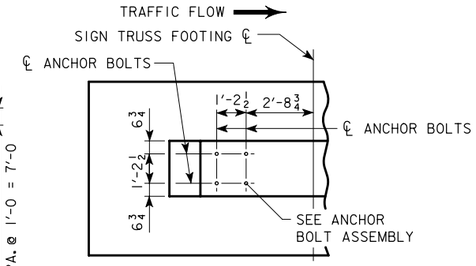
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 9 OF 10 FILE NO. 30499 DESIGN NO. 110

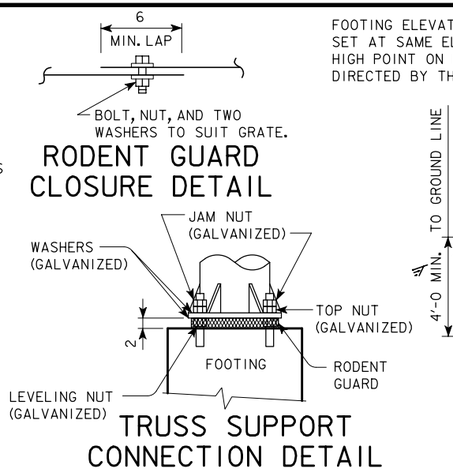


PLAN

(ANCHOR BOLT ASSEMBLIES NOT SHOWN.)

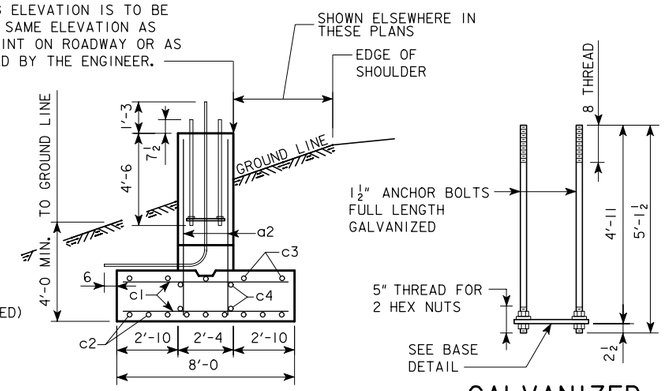


ANCHOR BOLT PLACEMENT DETAILS



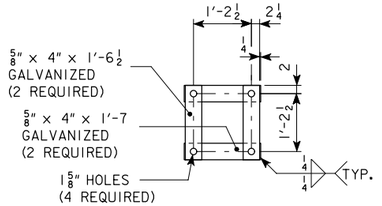
RODENT GUARD CLOSURE DETAIL

TRUSS SUPPORT CONNECTION DETAIL



END ELEVATION

GALVANIZED ANCHOR BOLT ASSEMBLY



GALVANIZED BASE DETAIL

GENERAL NOTES:

STRUCTURAL CONCRETE, CLASS C, SHALL BE USED FOR THE FOOTING.

EXCAVATION FOR FOOTING SHALL BE TO NEAT LINES AND CONCRETE SHALL BE PLACED AGAINST THE UNDISTURBED MATERIAL. ALL EXCAVATION FOR THE FOOTING SHALL BE DISPOSED OF IN THE AREA ADJACENT TO THE FOOTING AND SHAPED TO NORMAL GROUND CONTOUR, UNLESS OTHERWISE DIRECTED BY THE ENGINEER. MAXIMUM DESIGN BEARING CAPACITY IS 1.0 TONS PER SQUARE FOOT.

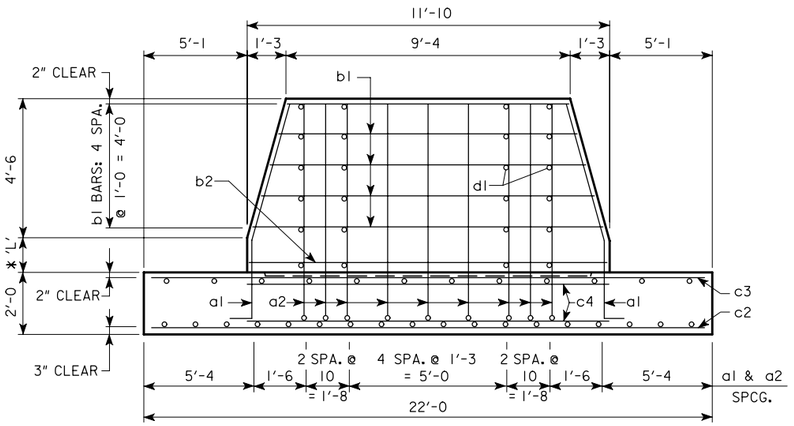
THE REQUIREMENTS PER FOOTING ARE TWO ANCHOR BOLT ASSEMBLIES INCLUDING SHIMS, NUTS (5 PER BOLT) AND WASHERS. REFER TO HARDWARE CLASSIFICATION TABLE FOR MATERIALS AND GALVANIZING REQUIREMENTS.

A RODENT GUARD SHALL BE PLACED BETWEEN THE CONCRETE FOOTING AND THE BASE PLATE, SEE MATERIALS I.M. 443.01.

PRICE BID FOR CONTRACT ITEMS SHALL INCLUDE ALL LABOR AND MATERIALS NECESSARY TO CONSTRUCT OVERHEAD SIGN FOOTING AS DETAILED HEREON. THE COST OF FURNISHING AND INSTALLING ANCHOR BOLT ASSEMBLIES, CONDUITS AND RODENT GUARD ARE TO BE INCLUDED IN THE UNIT PRICE BID FOR STRUCTURAL CONCRETE. CONTRACT ITEMS FOR OVERHEAD SIGN FOOTING CONSTRUCTION ARE:

- EPOXY COATED REINFORCING STEEL, POUNDS
- STRUCTURAL CONCRETE (MISCELLANEOUS), CUBIC YARDS
- EXCAVATION, CUBIC YARDS OF CLASS SPECIFIED

FOR FOOTINGS SUPPORTING SIGN TRUSSES WITH DYNAMIC MESSAGE SIGNS, PLACE ¾" GROUND WIRE DUCT AND TWO 2" ACCESS DUCTS WITHIN THE ANCHOR BOLT CIRCLE CLOSEST TO THE DIRECTION OF THE APPROACHING TRAFFIC. EXTEND CONDUIT ENDS 6" PAST EDGE OF FOOTING ON SIDE AWAY FROM ROADWAY. LOCATION SHALL BE ON DETAIL PROJECT PLANS. ALL DUCTS SHALL MEET REQUIREMENTS FOR PLASTIC CONDUIT.



SIDE ELEVATION

(ANCHOR BOLT ASSEMBLIES NOT SHOWN.)

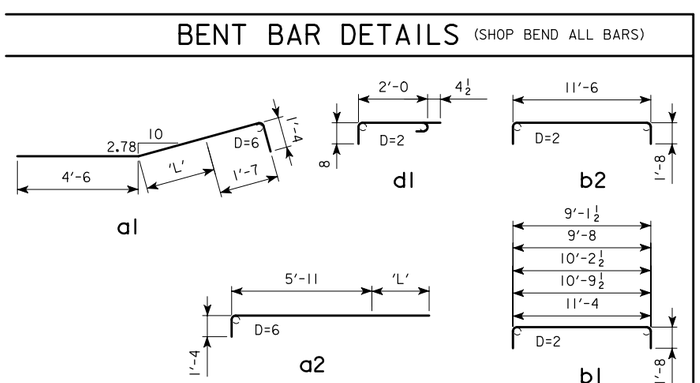
* 'L' SHALL NOT EXCEED 6'-0

CONCRETE PLACEMENT QUANTITIES

(ONE FOOTING)

ITEM	'L' = 0	EACH 1'-0 OF 'L'
WALL	4.12	1.02
FOOTING	13.04	
TOTAL (C.Y.)	17.16	1.02

BENT BAR DETAILS (SHOP BEND ALL BARS)



NOTE: ALL DIMENSIONS SHOWN ARE OUT TO OUT. D = PIN DIAMETER.

REINFORCING BAR LIST - EPOXY COATED

(ONE FOOTING)

	SIZE	SHAPE	'L' = 0 NO.	LENGTH	WEIGHT	SPACING	EACH 1'-0 OF 'L' NO.	LENGTH	WEIGHT
a1	8		8	7'-5	158	SEE DETAIL	8	1'-0 (A)	21
a2	8		18	7'-3	348	SEE DETAIL	18	1'-0 (A)	48
b1	4		10	Varies	91	1'-0	---	---	---
b2	4		---	---	---	---	2 (B)	14'-10	20
c1	6		30	7'-6	338	1'-6	---	---	---
c2	8		8	21'-6	459	1'-0	---	---	---
c3	6		8	21'-6	258	1'-0	---	---	---
c4	4		4	11'-10	32	SEE DETAIL	---	---	---
d1	4		20	3'-0½	41	SEE DETAIL	4 (C)	3'-0½	8
					TOTAL 1725 lbs				TOTAL 97 lbs

(A) ADDITIONAL LENGTH TO BAR a1 OR a2 FOR 'L' > 0 (C) FOUR IN EACH 1'-0 OF 'L'.

(B) TWO IN EACH 1'-0 OF 'L'.

DESIGN FOR

GALVANIZED OVERHEAD SIGN TRUSS WITH GALVANIZED STEEL SUPPORTS

FOOTING DETAILS

STA. 629+55.00 FEBRUARY, 2010

STORY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 10 OF 10 FILE NO. 30499 DESIGN NO. 110

DESIGN TEAM JRH / JDC | STORY COUNTY | PROJECT NUMBER ITS-035-5(100)111--25-85 | SHEET NUMBER V.10

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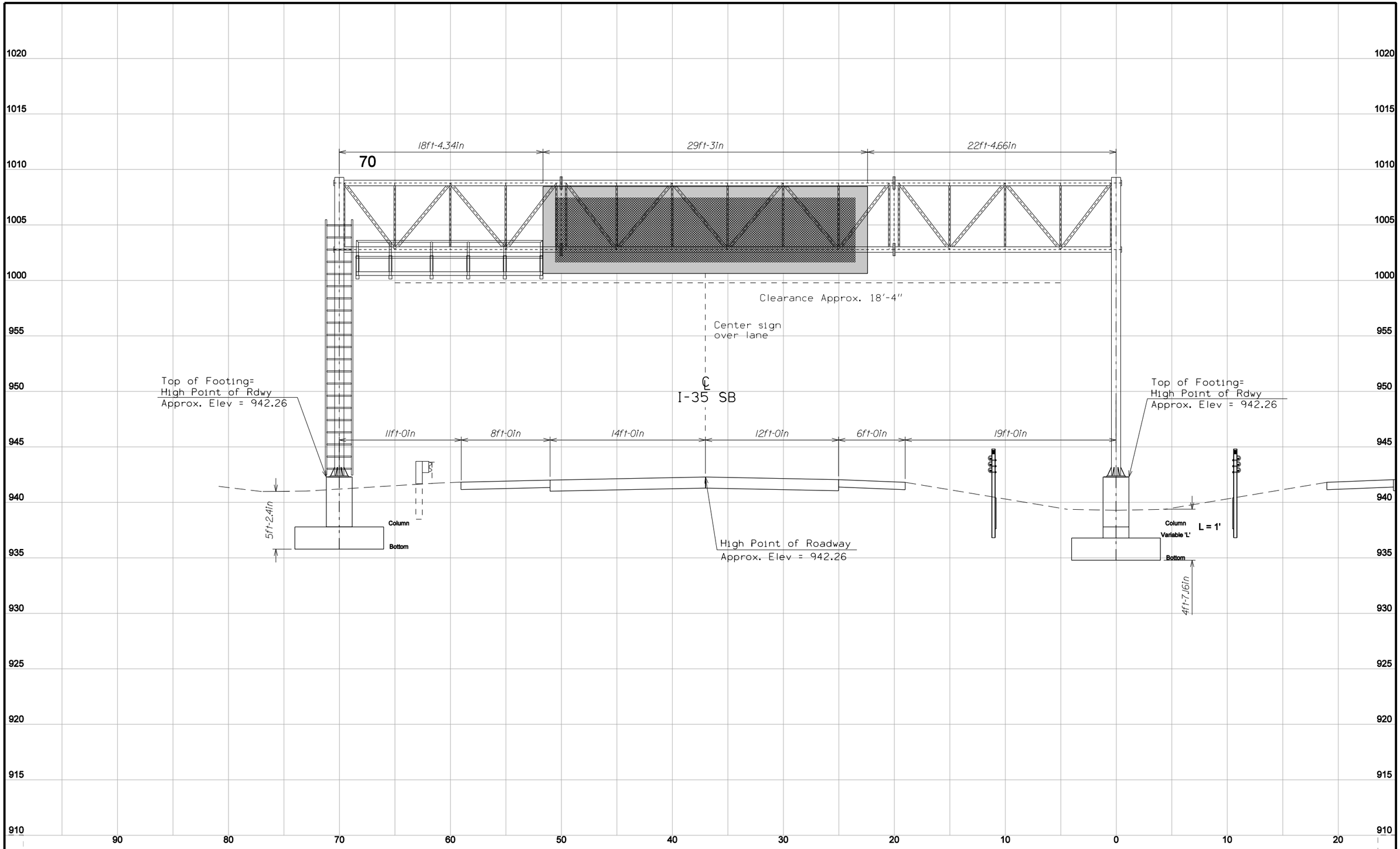

STA 629+55
PROPOSED 70' TRUSS

I-35 SOUTHBOUND
STORY COUNTY

DMS 33

IOWA DEPARTMENT OF TRANSPORTATION	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM NARIGON	STORY COUNTY	PROJECT NUMBER ITS-035-5(100)111--25-85	SHEET NUMBER X.01

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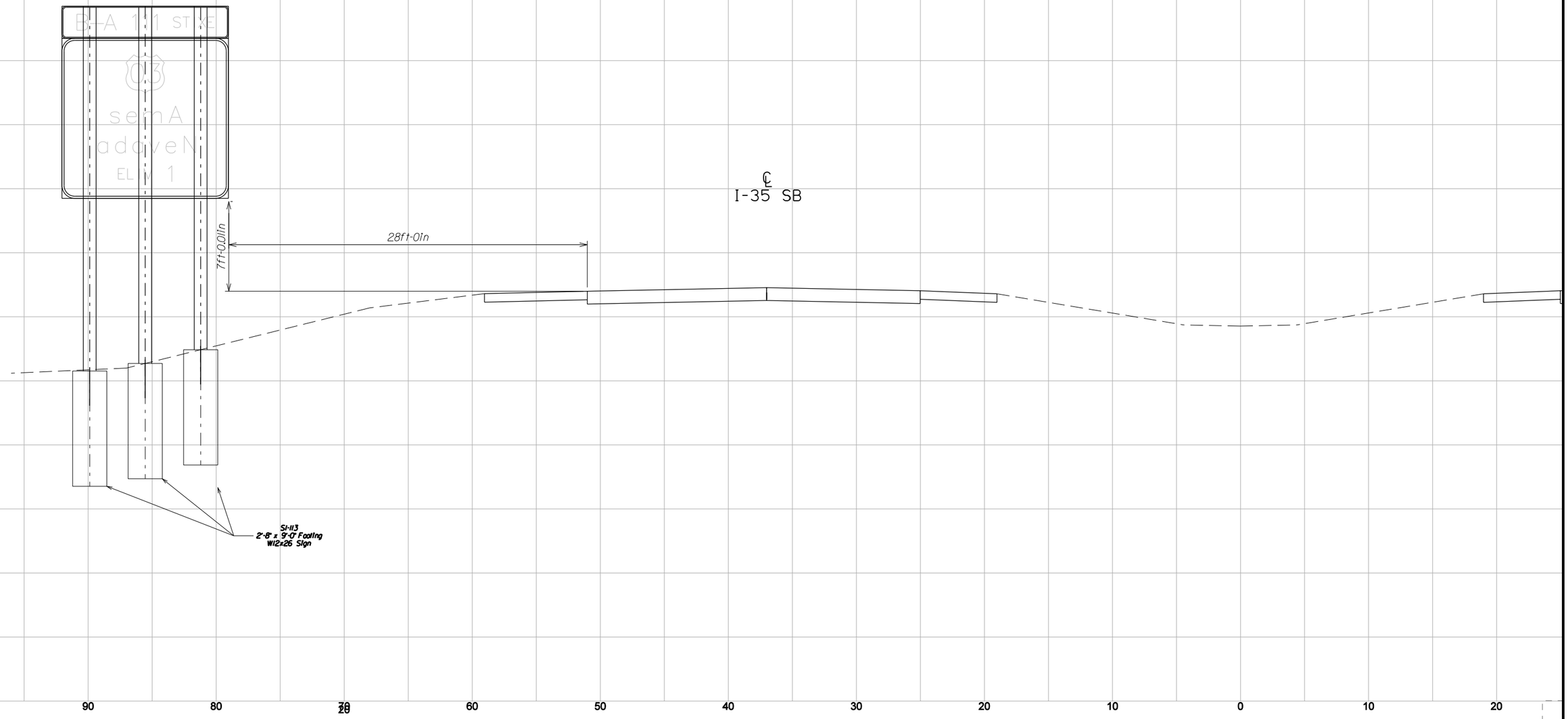

STA 637+50 ADVANCE SIGN	I-35 SOUTHBOUND STORY COUNTY	SIGN #35-85-111 M106

IOWA DEPARTMENT OF TRANSPORTATION	OFFICE OF TRAFFIC & SAFETY	DESIGN TEAM NARIGON	STORY COUNTY	PROJECT NUMBER ITS-035-5(100)111--25-85	SHEET NUMBER X.02

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